Tehran University of Medical Sciences

Nursing Practice Today

Review Article

High-performance team assessment instruments: A scoping review

Tânia Dionísia Ferreira Oliveira[1,2]*, Soraia Cristina de Abreu Pereira[1,3], Adriana Isabel Alves Pacheco[2],
Diana Margarida Moreira Sanches[4], Denise Antunes de Azambuja Zocche[5], Olga Maria Pimenta Lopes Ribeiro[3]

[1]Abel Salazar Institute of Biomedical Sciences, University of Porto, Porto, Portugal
[2]Local Health Unit of Alto Ave, Guimarães, Portugal
[3]School of Nursing, University of Porto, Porto, Portugal
[4]Local Health Unit of Gaia and Espinho, Gaia, Portugal
[5]State University of Santa Catarina, Chapecó, Brazil

ARTICLE INFO

Corresponding Author:
Tânia Dionísia Ferreira Oliveira, Abel Salazar
Institute of Biomedical Sciences, University
of Porto, Porto, Portugal; Local Health Unit of
Alto Ave, Guimarães, Portugal.
E-mail: tania.dionisia.oliveira@gmail.com

ABSTRACT

Background & Aim: Assessing team performance is crucial in developing effective management strategies within healthcare. Therefore, identifying reliable tools that accurately measure team competencies is essential. This study aims to review the existing evidence on valid instruments to evaluate high-performance teams in healthcare.

Methods & Materials: A scoping review was conducted according to the methodology proposed by the Joanna Briggs Institute. The study was based on the PCC framework (Population, Concept, and Context), concentrating on healthcare teams (population), tools for evaluating high-performance teams (concept), and all areas of professional practice (context). The literature search included databases such as CINAHL Complete (EBSCO), LILACS (BVS), MEDLINE Complete (PubMed), PsycINFO (EBSCO), and Scopus. Grey literature was searched on WorldCat and ProQuest Dissertations & Theses. Study selection took place in two stages: an initial screening of titles and abstracts to identify relevant studies, followed by a full-text review of the selected articles.

Results: Initially identified 1,104 articles and selected six for inclusion in this review. Four instruments were recognized for assessing high-performance teams in healthcare: the Mayo High Performance Teamwork Scale, the Ottawa Crisis Resource Management Global Rating Scale, the Trust, and the Team Performance Observation Tool.

Conclusion: The primary contribution of this study was the identification of tools that provide constructive feedback to facilitate the ongoing development of high-performance teams. The implementation of systematic, evidence-based strategies supported by these evaluation tools fosters a data-driven approach to clinical decision-making and enhances the overall quality of care.

Introduction

Patient safety has recently emerged as a critical global concern, directly impacting patients' health and well-being (1). The World Health Organization (WHO) identifies substandard healthcare as a leading cause of disability and mortality worldwide, highlighting the urgent need for targeted interventions to improve patient safety (2, 3).

Healthcare organizations have increasingly focused on examining nurses' work environments, recognizing their crucial influence on patient outcomes, nurse well-being, and overall organizational effectiveness (3, 4, 5). Unfavorable work conditions, such as excessive workloads, shortages of human and material resources, poor communication among team members, and dissatisfaction with teamwork, have been linked to higher rates of adverse events (3). The role of teamwork in ensuring effective clinical performance, enhancing patient safety, and reducing adverse events is well established (6, 7). Therefore, healthcare organizations must implement systems, structures, and workforce management strategies that promote high-performing teams (8).

Despite this, the literature reveals significant complexity in defining and assessing high-performing teams. The lack of a clear,

consistent definition of "high performance" and the limited availability of reliable measurement tools present significant challenges for effectively comparing and evaluating healthcare systems (9). According to Katzenbach and Smith, a high-performing team is comprised of individuals united by a common goal who exhibit high levels of collaboration and diversity in skills and perspectives. This collaborative environment promotes superior outcomes (10). The effectiveness of high-performing teams is especially apparent in high-pressure environments, where their performance is positively correlated with enhanced quality of care and improved health outcomes (11).

Consequently, numerous scholars have examined the dynamics and dimensions of high-performing teams, highlighting key factors such as effective communication, leadership, conflict resolution, collaboration, and role behavior (12-16). Various interventions have been developed to enhance team performance, with particular emphasis on educational approaches and simulation-based training (17, 18). Amid rapid scientific and technological advancements, increasing healthcare complexity, and a growing focus on evidence-based practice, implementing high-performance teams in healthcare has become critically important (19). High-performance team assessment tools, which include both self-assessment and peer-assessment methods, are designed to evaluate a team's quality, effectiveness, and efficiency across various parameters. These tools help identify strengths and areas for improvement. Supporting the ongoing development of the team to perform at its best (20). These assessments are crucial for setting goals, clarifying roles, and enhancing team performance (21).

For researchers, managers, and healthcare professionals, synthesizing existing knowledge about tools for evaluating high-performing healthcare teams is vital to a comprehensive understanding of team performance. To address this need, researchers conducted a scoping review to explore the current landscape of assessment methods for high-performing teams.

This review aims to systematically document the existing evidence on methodologies used to evaluate high-performance teams in healthcare, including their content, validity, and reliability. Using the PCC (Population, Concept, and Context) framework, researchers formulated the guiding question: "What assessment tools are commonly used to evaluate high-performance teams in healthcare settings, including their content, validity, and reliability?"

Methods

After formulating the research question, researchers conducted a scoping review in accordance with the Joanna Briggs Institute (JBI) guidelines (22). The review followed these steps: 1) identifying the research question and review objective using the PCC framework (Population, Concept, Context); 2) developing a protocol that specified inclusion criteria and the search strategy; 3) searching relevant databases and grey literature; 4) selecting studies independently by multiple reviewers; 5) extracting data using a standardized approach; 6) performing analysis and descriptive synthesis; and 7) presenting and interpreting the findings (23). The review process was organized and reported following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Scoping Reviews (PRISMA-ScR) guidelines (24).

A protocol was developed for this review, which was published in advance and outlined all methodological steps (25). The protocol for the scoping review was registered in the Open Science Framework (OSF) with the following Digital Object Identifier (DOI): https://doi.org/10.17605/OSF.IO/5TE97

Inclusion criteria

The review considered various sources, including preliminary research, primary and secondary studies, literature reviews, dissertations, and gray literature. No temporal, geographical, or linguistic restrictions were applied to cover the broadest possible spectrum of information on the topic (23).

Nevertheless, within the scoping review framework, it was essential to establish clear inclusion criteria to guide study selection. To this end, the PCC framework, recommended by the JBI for scoping reviews, was employed (23).

Population: Studies involving healthcare teams were included.

Concept: Researchers included studies that examined tools for assessing high-performing teams.Context: The review encompassed all fields of professional healthcare practice.

Studies involving teams outside the health sector were excluded because they did not clearly present tools for assessing high-performance teams or did not describe practices relevant to the topic.

Search methodology

A comprehensive search strategy was developed to systematically map the topic and provide a clear, thorough overview of the available evidence. Following the JBI guidelines for scoping reviews, researchers used a three-stage approach, beginning with an initial preliminary search on the topic (26). In the first stage, researchers searched the following databases: CINAHL Complete (EBSCO), LILACS (BVS), and MEDLINE Complete (PubMed).

They used index terms, 2023 MeSH descriptors, and 2023 CINAHL Headings to identify studies related to the assessment of high-performing teams. In the second stage, researchers reviewed the titles, abstracts, and keywords of relevant articles. Insights from this review informed refinements to the search strategy, which combined Boolean operators with targeted keywords and indexing terms. The search syntax was tailored for each database to maximize retrieval.

As summarized in Table 1, researchers conducted comprehensive searches in December 2023 across CINAHL Complete (EBSCO), LILACS (BVS), MEDLINE Complete (PubMed), PsycINFO (EBSCO), and Scopus. To ensure the inclusion of gray literature, researchers also searched WorldCat and ProQuest Dissertations and Theses, with the most recent search completed on June 4, 2024. In the third stage, researchers screened the reference lists of all included studies to identify additional relevant research. Studies identified through this process were evaluated using predefined inclusion criteria, ensuring a comprehensive and rigorous review.

Table 1. Search strategy and database results

Search strategy– December 19, 2023

Databases: Medline (PubMed) Results: 600
("employee performance appraisal"[MeSH Terms] OR "high performance"[Title/Abstract] OR "high performance team"[Title/Abstract]) AND ("health"[MeSH Terms] OR "nursing"[MeSH Terms] OR "nurs*"[Title/Abstract] OR "healthcare"[Title/Abstract]) AND ("surveys and questionnaires"[MeSH Terms] OR "assessment"[Title/Abstract] OR "instrument"[Title/Abstract] OR "validation instrument"[Title/Abstract] OR "measure instrument"[Title/Abstract])

Databases: CINAHL (EBSCO) Results: 102
(AB (MM "Employee Performance Appraisal" OR "high performance" OR "high performance team")) AND (AB (MM "Health" OR MM "Nurses" OR "nurs*" OR "healthcare")) AND (AB (MH "Survey Research" OR MH "Clinical Assessment Tools" OR MH "Instrument Validation" OR MH "Instrument Construction" OR MH "Research Instruments" OR "assessment" OR "instrument" OR "validation instrument" OR "measure instrument"))

Databases: SCOPUS Results: 151
ABS ("employee performance appraisal" OR "high performance" OR "high performance team") AND (ABS ("nursing" OR "nurs*" OR "healthcare")) AND (ABS ("surveys and questionnaires" OR "assessment" OR "instrument" OR "validation instrument" OR "measure instrument"))

Databases: LILACS (BVS) Results: 1
(ABS ("employee performance appraisal" OR "high performance" OR "high performance team")) AND (ABS ("health" OR "nursing" OR "nurs*" OR "healthcare")) AND (ABS ("surveys and questionnaires" OR "assessment" OR "instrument" OR "validation instrument" OR "measure instrument"))

Databases: PsycINFO (EBSCO) Results: 234
(AB (DE "Group Performance" OR DE "Performance" OR DE "Job Performance" OR DE "Employee Efficiency" OR DE "Employee Productivity" OR "high performance" OR "high performance team")) AND (AB (DE "Health" OR DE "Nurses" OR "nurs*" OR "healthcare")) AND (AB (DE "Questionnaires" OR DE "Surveys" OR DE "Evaluation" OR DE "Program Evaluation" OR "assessment" OR "instrument" OR "validation instrument" OR "measure instrument"))

Databases: WorldCat - Filters: Dissertations and Theses Results: 13
kw: "high-performance teams" AND kw: "assessment."

Databases: ProQuest Filters: Dissertations and Theses Results: 3
abstract (high performance) AND abstract (assessment) AND subject (healthcare)

Study selection

After completing the database searches, researchers compiled the results and imported them into Mendeley Reference Manager (version 2.77.0). All identified studies and documents were then uploaded into the Rayyan platform (Qatar Computing Research Institute, QCRI) (27), which automatically detected and removed duplicate records. Two reviewers independently screened titles and abstracts to determine relevance. Full-text articles of potentially eligible studies were thoroughly retrieved and assessed against the predefined inclusion criteria. Study selection was carried out independently by the two reviewers, with any disagreements resolved through discussion or consultation with a third reviewer. When necessary, corresponding authors were contacted to obtain full-text articles.

Data extraction

A systematic and rigorous data extraction process was conducted in accordance with JBI guidelines. Researchers meticulously extracted data from the included studies to ensure a comprehensive understanding of the topic. A standardized, Word-based extraction tool, specifically developed to address the study's objectives and research question, guided the process. Extracted information encompassed study title, author(s), year of publication, country of origin, objectives, methodology, instruments and their characteristics, results, and main conclusions. The tool was applied consistently across all studies. When necessary, corresponding authors were contacted to obtain additional information or clarify details regarding their instruments. Data extraction was performed independently by two reviewers, with

discrepancies resolved through discussion or consultation with a third reviewer.

Data analysis & presentation

Following JBI recommendations, the scoping review results were presented in tables to display the extracted data. Additionally, a narrative synthesis guided by Bardin's principles (28) was developed, allowing for a deeper understanding of the topic. This synthesis addressed the review's objectives and research questions, thoroughly exploring the relevant literature.

Results

Initially, 1,104 potentially relevant articles were identified from the database searches. After removing 139 duplicates, two reviewers independently screened the titles and abstracts of the remaining 965 articles, excluding 934 studies based on the exclusion criteria. A full-text review of 28 articles was then conducted, resulting in the exclusion of 23 studies due to population (n= 4), concept (n= 18), or inaccessibility (n= 1). Following this rigorous process, five studies from the primary search met the established inclusion criteria. A secondary search of the bibliographic references of these studies identified one additional study, resulting in a total of six articles included in this review. The PRISMA flowchart (29), presented in Figure 1, illustrates the study selection process and the reasons for exclusion at the full-text review stage. Table 2 provides a summary of the included studies, detailing the authors, year of publication, country, and instruments used to assess high-performance teams in healthcare.

Table 2. Included articles

| Authores	Year	Country	Tools
Ballangrud et al. (30)	2014	Norway	Mayo High Performance Teamwork Scale / Ottawa Crisis Resource Management Global Rating Scale
Bursiek et al. (31)	2020	USA	Mayo High Performance Teamwork Scale
Malec et al. (32)	2007	USA	Mayo High Performance Teamwork Scale
Bultas et al. (33)	2014	USA	Mayo High Performance Teamwork Scale
Sifaki-Pistolla et al. (34)	2019	Greece	Trust
Harvey et al. (35)	2013	USA	Team Performance Observation Tool
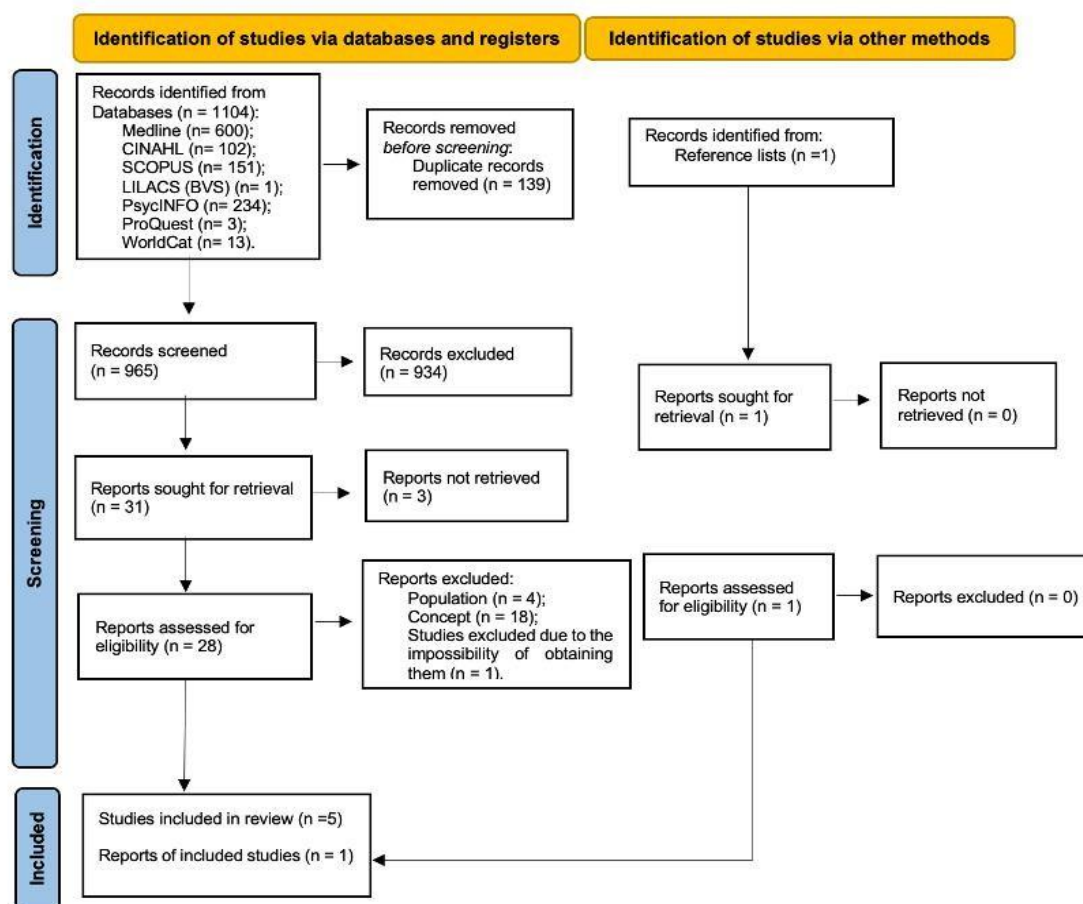
Figure 1. PRISMA flow diagram: Study selection process

Based on the included articles (Table 2), two tables were developed to categorize the identified instruments: One detailing instruments for assessing high-performance teams (Table 3) and the other presenting their psychometric properties (Table 4). This scoping review identified four instruments for evaluating high-performance teams (Table 3). All instruments are Likert-type scales and were designed to be completed by observers. The longest instrument, the Mayo High Performance Teamwork Scale (MHPTS), contains 16 items, while the shortest, the Ottawa Crisis Resource Management Global Rating Scale (Ottawa GRS), contains six items (Table 4). Two studies focused exclusively on nurse samples (30, 33), whereas the remaining four involved multidisciplinary healthcare teams (31, 32, 34, 35). Most studies were conducted in educational settings (n=5), with one study carried out in a hospital setting (n=1).

The Mayo High Performance Teamwork Scale (MHPTS), designed by Malec et al. (30-33), is an instrument that evaluates

high-performance teams in healthcare. Malec et al. (32) developed it to assess high-performance teams' competencies and work behaviors in clinical simulation settings. The project aimed to create a tool for training contexts that evaluates team behaviors and crisis resource management (CRM) competencies, such as cooperation, communication, leadership, management, situational awareness, and decision-making. The authors intended the instrument to assess training effectiveness and engage professionals in a reflective educational process to enhance high-performance team competencies. The original MHPTS comprised 19 items (33); however, the current version has been revised to include 16 items (30, 31, 33). The instrument is structured into two sections, each comprising eight items. In the first section (items 1-8), participants rate qualities demonstrated by the team during the simulation, such as leadership and communication. Malec et al.'s version (32) uses a Likert-type scale originally scored from 1 to 4 (1= never, 2= rarely, 3= inconsistent, 4= consistent), which was later modified to a 0 to 2

scale (0= never or rarely, 1= inconsistent, 2= consistent). The second section (items 9 to 16) assesses perceptions of team qualities and includes a "not applicable" (NA) option when appropriate (30,31,33). The psychometric properties were evaluated using various methods, including the Rasch measurement model (32) (Table 3).

Table 3. Instruments that assess high-performance teams in the healthcare sector

Instruments, Authors, Year, and Country	Target group	Instrument structure	Response format
Mayo High Performance Teamwork Scale (MHPTS) Ballangrud *et al.* 2014 Norway (30)	Intensive care unit nurses	It consists of 8 items, because it uses the first part of the MHPTS.	Rating of 0, 1, or 2 points (0 = never or rarely, 1 = inconsistent, 2 = consistent)
Mayo High Performance Teamwork Scale (MHPTS) Bursiek *et al.* 2020 USA (31)	Residents and nurses	Consisting of 16 items.	Scale with three possible responses: never or rarely (0), inconsistent (1), and consistent (2)
Mayo High Performance Teamwork Scale (MHPTS) Malec *et al.* 2007 USA (32)	Residents and nurses	Consisting of 16 items, it initially had 19 items.	Original measure: Rating of 1, 2, 3, or 4 points (1 = never, 2 = rarely, 3 = inconsistent, 4 = consistent) Revised measure: Rating of 0, 1, or 2 points (0 = never or rarely, 1= inconsistent, 2= consistent)
Mayo High Performance Teamwork Scale (MHPTS) Bultas *et al.* 2014 USA (33)	Health teams	Consisting of 16 items.	Scale with three possible responses: never or rarely (0), inconsistent (1), and consistent (2)
Ottawa Crisis Resource Management Global Rating Scale (Ottawa GRS) Ballangrud *et al.* 2014 Norway (30)	Intensive care unit nurses	Consisting of six items, one general item on crisis resource management (CRM) performance, and five subsets of non-technical skills (NTS) items, including assessment criteria related to: leadership, problem solving, situational awareness, resource utilisation, and communication.	7 points, with a rating of 1-2 = novice (all CRM skills require significant improvement); 3-4= competent (many CRM skills require moderate improvement); 5-6 = competent (most CRM skills require slight improvement) and 7 = clearly superior (few or no CRM skills requiring only minor improvement).
TRUST Sifaki-Pistolla *et al.* 2019 Greece (34)	Healthcare professionals in the perioperative team (surgeons, junior surgeons, anaesthetists, junior anaesthetists, nurses, and hospital porters).	Consisting of 2 items. The first item is trust (6 items): estimation of interprofessional trust through the collection of information on team tasks, knowledge, help, sources, ideas, and suggestions. The second item is performance (4 items): measuring team performance through questions related to the effective completion of tasks, problem management, work quality, and critical errors.	5-point Likert scale (1= strongly disagree to 5= strongly agree).
Team Performance Observation Tool Harvey *et al.* 2013 USA (35)	Interprofessional healthcare teams	The assessment focuses on key domains: team structure, communication, leadership, situation monitoring, and mutual support.	Team performance in each domain is rated on a 5-point Likert scale: 1= very poor, 2 = poor, 3=acceptable, 4=good, and 5= excellent.

Using simulation exercises, the Ottawa Crisis Resource Management Global Rating Scale (Ottawa GRS) is designed to evaluate team performance during crises, particularly in healthcare environments such as intensive care units. Expert observers assess team effectiveness under high stress and time pressure, identifying areas for improvement in teamwork and crisis management skills. The Ottawa GRS measures six dimensions: one general dimension evaluating overall CRM performance and five non-technical skills (NTS) dimensions: leadership, problem-solving, situational awareness, resource utilization, and communication. Performance is rated on a 7-

point Likert scale, ranging from novice to clearly superior. Scores of 1–2 indicate novice performance, signaling a significant need for CRM skill development; 3–4 represent advanced novice performance, reflecting moderate development needs; 5–6 correspond to competent performance, with only minor areas for improvement; and a score of 7 reflects superior performance, indicating minimal or no further development required (30) (Table 3).

Expert evaluations and self-assessment enable nurses to raise the team's awareness of quality and client safety issues (30) (Table 3).

The "Trust" instrument (34) includes two dimensions. The first dimension, "Trust," comprises six items to assess interprofessional trust. These items gather information about team tasks, knowledge sharing, support, sources of information, ideas, and suggestions. The second dimension, "Performance," contains four items that evaluate team effectiveness in task completion, problem management, work quality, and critical errors. Both dimensions utilize a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). This instrument has helped identify factors that strongly correlate with higher team performance. Research indicates that higher levels of trust are frequently associated with improved team outcomes (34) (Table 3).

The TeamSTEPPS® (Team Strategies and Tools to Enhance Performance and Patient Safety) program uses the validated Team Performance Observation Tool to assess trauma team performance in resuscitation settings. This tool was used both before and after implementing multidisciplinary simulation-based training to assess teamwork and overall performance (35) (Table 3).

Psychometric properties of the instruments

The scoping review method was used; therefore, a formal quality assessment of the included articles was not required (23). The guidelines based on Consensus Standards for the Selection of Health Measurement Instruments (COSMIN) were the basis for assessing the quality of the instruments (37). This evaluation considered criteria such as reliability, validity (content, construct, and criterion), sensitivity, and responsiveness. The source of each scale was consistently reported (Table 4).

Table 4. The psychometric properties of instruments that evaluate high-performance equipment in the health sector

Instruments	Sample	Face validity	Construct validity	Criterion validity	Reliability	Sensitivity	Responsiveness	Translations
Mayo High Performance Teamwork Scale (MHPTS) (30)	Intensive care unit nurses	X	X		X	X		English Norwegian
Mayo High Performance Teamwork Scale (MHPTS) (31)	Residents and nurses		X		X	X	X	English
Mayo High Performance Teamwork Scale (MHPTS) (32)	Residents and nurses		X		X	X	X	English
Mayo High Performance Teamwork Scale (MHPTS) (33)	Health teams		X		X	X	X	English
Ottawa Crisis Resource Management Global Rating Scale (Ottawa GRS) (30)	Intensive care unit nurses	X	X		X	X		English Norwegian
TRUST (34)	Healthcare professionals in the perioperative team		X	X	X	X		English Grego
Team Performance Observation Tool (35)	Interprofessional healthcare teams				X	X		English

Discussion

The value of collaboration in clinical settings is well established. However, there is still no clear consensus on the most appropriate instruments to assess high-performance teams in healthcare. This scoping review aimed to map the available evidence on instruments used to evaluate high-performance teams in the healthcare field. Four instruments that aligned with the initial objective were identified.

Analysis of the included studies revealed a range of pedagogical approaches used in nursing education. One prominent tool is the MHPTS (30-33), which evaluates team performance through nurse self-assessment and expert observation. This review supports the MHPTS as a valid and adaptable instrument across various healthcare contexts. Its domains closely align with the competencies and attributes commonly associated with high-performance teams. Importantly, its application in simulation-based training offers notable benefits. Findings from MHPTS-guided evaluations have informed targeted interventions, ultimately enhanced team performance, and contributed to improved patient safety. In studies conducted by Soghikian et al., the MHPTS was rated highly for its ease of use and practical utility (36).

Another instrument identified was the Ottawa GRS, which was applied in simulated emergency scenarios involving intensive care nurses responding to cardiac arrest. This tool is designed to assess team performance, focusing on non-technical skills such as communication, leadership, and decision-making. It incorporates training-based evaluation to highlight team strengths and areas for improvement (30). Ballangrund et al. (30) identified a statistically significant discrepancy between expert assessments and nurses' self-assessments, highlighting differences in perceived performance among healthcare professionals. This finding emphasizes the importance of incorporating expert evaluation to identify performance gaps and guide targeted improvements accurately. Such evaluations reinforce the need for continuous training and structured feedback as critical components in developing high-performance teams. According to the same authors, ensuring patient safety and care quality during emergencies in intensive care settings is crucial. Also,

improving teaching methods that develop technical and non-technical skills is necessary (30).

The "Trust" instrument assesses interprofessional trust within teams and explores how it relates to overall team effectiveness. Studies underscore the vital role of cultivating interprofessional trust in enhancing individual contributions and overall team performance, improving patient care quality. The research found a strong association between trust and team outcomes, even in settings with limited resources. However, team effectiveness also depended on other factors, including the team's prior experience and size. Notably, healthcare professionals expressed differing views on how trust influences performance across the team and within specific professional groups (34).

TeamSTEPPS® includes tools like the Team Performance Observation Tool, which objectively evaluates communication and teamwork by monitoring critical team behaviors. Evidence supports the tool's ability to enhance team interactions, leading to higher care quality and better patient outcomes. Incorporating these assessment tools into training cultivates an environment of collaboration, shared responsibility, and ongoing development, fundamental elements for delivering safe and effective nursing care. Beyond merely measuring progress, this approach helps reinforce strong teamwork practices and promotes lasting improvements in team performance (35). Various tools are available to assess team effectiveness, and high-fidelity simulation offers a practical approach to evaluate and strengthen team skills before they are utilized in clinical scenarios.

Implementing high-performance team assessment tools in nursing is a key strategy for healthcare organizations. These tools help uncover areas needing improvement, guide focused interventions, and ultimately support the delivery of higher-quality care and organizational success.

Strengths and Limitations

A thorough bibliographic search, clear eligibility criteria, and independent evaluations by two reviewers strengthen this scoping review. The analysis revealed two key challenges. First, many reviewed articles did not explicitly define the concept of high-performance teams; nevertheless,

their theoretical frameworks and findings align with widely recognized characteristics of these teams. Second, most of the identified tools were primarily applied in simulation settings, which may limit their generalizability to actual clinical environments.

Several limitations of the instruments included in this study were identified. Both MHPTS and Ottawa have been validated for simulation environments. However, their use in real clinical settings remains limited. The TRUST instrument may not fully reflect the dynamics in clinical settings. In programmes such as TeamSTEPPS, the Team Performance Observation Tool has demonstrated significant gains in team performance after simulation-based training. However, the generalization of these results requires further investigation. As a research suggestion, the clinical validity of these instruments would need to be established.

Conclusion

This scoping review highlights the growing importance of high-performance teams in healthcare delivery. In this context, four key instruments were identified to evaluate team performance within the health sector. These tools typically use Likert-type scales, enabling structured data collection and supporting quantitative team performance analysis in simulated and clinical settings. The MHPTS stands out for its simplicity and reliability, alongside the Team Performance Observation Tool from the TeamSTEPPS® training program, which emphasizes communication and collaboration strategies in realistic simulation environments.

While these instruments demonstrate strong psychometric properties, some limitations remain. For example, many rely on self-assessment, which can introduce bias, and further validation is needed to confirm their effectiveness in real-world clinical settings. Additionally, focusing solely on observable behaviors may overlook critical contextual factors that shape team dynamics and overall effectiveness. Among these tools, the MHPTS is the most widely used for self-assessment and external evaluation, mainly because it effectively detects improvements following training interventions. Most studies using the MHPTS have been conducted in high-fidelity simulations, interdisciplinary training programs, and complex hospital environments.

Relevance to clinical practice

This scoping review systematically gathered information on instruments that are valuable resources for assessing high-performance teams in clinical practice and health education. These tools offer a structured evaluation framework that supports ongoing training and team development. Insights gained from applying these instruments can help promote safer care environments and nurture a culture of quality and excellence in healthcare delivery.

References

1.   Malinowska-Lipień I, Micek A, Gabryś T, Kózka M, Gajda K, Gniadek A, Brzostek T, Fletcher J, Squires A. Impact of the work environment on patients' safety as perceived by nurses in Poland: A cross-sectional study. International Journal of Environmental Research and Public Health. 2021 Nov 17;18(22):12057. doi:10.3390/ijerph182212057

2.   World Health Organization (WHO). World Patient Safety Day, 17 September 2020. Charter—Health worker safety: a priority for patient safety. Geneva: WHO; 2020.

3.   Pereira SCA, Ribeiro OMPL, Fassarella CS, Santos EJF. The impact of nursing practice environments on patient safety culture in primary health care: A scoping review. BJGP Open. 2024;8(1): BJGPO.2023.0062. doi:10.3399/BJGPO.2023.0062

4.   Kendrick M, Kendrick K, Morton P, Taylor NF, Leggat SG. Hospital staff report it is not burnout, but a normal stress reaction to an uncongenial work environment: Findings from a qualitative study. International Journal of Environmental Research and Public Health. 2020 Jun;17(11):4107. doi:10.3390/ijerph17114107

5.   Ribeiro OM, Perondi AR, Gomes JT, Ventura-Silva JM, Ribeiro MP, Castro SF, Oliveira TD, Trindade LD. Nursing Practice Environments in Hospitals: A Comparative Study between Portugal and Brazil. Nursing Reports. 2024 Oct 9;14(4):2910-22. doi:10.3390/nursrep14040212

6.   Aase I, Tjoflåt I, Hjorthaug Urstad K. Using the 'huddle'to enhance interprofessional teamwork among nursing students through a podcast: A qualitative and exploratory pilot study. BMC Nursing. 2021 Nov 22;20(1):235. doi:10.1186/s12912-021-00747-4

7.   Kohanová D, Solgajová A, Lušňáková M, Bartoníčková D. The level of teamwork and associated factors in the selected hospitals from the nurses' perspective: A cross-sectional study. Nursing Practice Today. 2023;10(4):364-73. doi:10.18502/npt.v10i4.14082

8.   Leggat SG, Bartram T, Stanton P. High performance work systems: the gap between policy and practice in health care reform. Journal of Health Organization and Management. 2011 Jun 21;25(3):281-97. doi:10.1108/14777261111143536

9.   Ahluwalia SC, Damberg CL, Silverman M, Motala A, Shekelle PG. What defines a high-performing health care delivery system: A systematic review. The Joint Commission Journal on Quality and Patient Safety. 2017 Sep 1;43(9):450-9. doi: 10.1016/j.jcjq.2017.03.010

10.   Katzenbach J, Smith D. The wisdom of teams: creating the high-performance organization. Boston (MA): Harvard Business School Press; 1993.

11.   Santos J, Sá Leão N, Durão M. Perceção de eficácia em equipas de alta performance. RECIMA21-Revista Científica Multidisciplinar-ISSN 2675-6218. 2024 Jul 11;5(1):e515435. doi:10.47820/recima21.v5i1.5435

12.   Almeida PL, Pimentel D, Marques-Quinteiro P. Equipas de alto desempenho: conceitos, dinâmicas e práticas. Lisboa: Instituto Universitário de Ciências Psicológicas, Sociais e da Vida (ISPA); 2021. Disponível em: https://repositorio.ispa.pt/handle/10400.12/8734

13.   Rabkin SW, Frein M. Overcoming obstacles to develop high-performance teams involving physicians in health care organizations. Healthcare (Basel). 2021 Aug 31;9(9):1136. doi: 10.3390/healthcare9091136

14.   Gomez LE, Bernet P. Diversity improves performance and outcomes. Journal of the National Medical Association. 2019 Aug 1;111(4):383-92. doi:10.1016/j.jnma.2019.01.006

15.   Westover JH. Building and maintaining a high-performing team. Human Capital Leadership Review. 2024;12(3). doi:10.70175/hclreview.2020.12.3.5

16.   Brasier AR, Burnside ES, Rolland B. Competencies supporting high-performance translational teams: A review of the SciTS evidence base. Journal of Clinical and Translational Science. 2023 Jan;7(1):e62. doi:10.1017/cts 2023.17

17.   Salas E, DiazGranados D, Klein C, Burke CS, Stagl KC, Goodwin GF, Halpin SM. Does team training improve team performance? A meta-analysis. Human Factors. 2008 Dec;50(6):903-33. doi:10.1518/001872008X375009

18.   Buljac-Samardzic M, Doekhie KD, van Wijngaarden JD. Interventions to improve team effectiveness within health care: a systematic review of the past decade. Human Resources for Health. 2020 Jan 8;18(1):2. doi: 10.1186/s12960-019-0411-3

19.   Coleman DM, Dossett LA, Dimick JB. Building high-performing teams: Opportunities and challenges of inclusive recruitment practices. Journal of Vascular Surgery. 2021 Aug 1;74(2):86S-92S. doi: 10.1016/j.jvs.2021.03.054

20.   Zhang B, Tang F, Sun B, Niu Y, Tang Z, Sun X. High-performance work systems, multiple commitments, and knowledge exchange and combination among Chinese public hospital nurses. Nursing Open. 2022 Mar;9(2):1445-55. doi: 10.1002/nop2.921

21.   Pinto C, Narra A, Merciano S, Bessa D, Pereira AT, Piteira M. Motivação e avaliação de

desempenho dos enfermeiros na administração pública portuguesa, durante a pandemia de COVID-19: Ciências da Vida e da Saúde. Revista da UI_IPSantarém. 2022 Dec 29;10(1):e27780. doi: 10.25746/ruiips.v10.i1.27780

22. Peters MD, Godfrey CM, Khalil H, McInerney P, Parker D, Soares CB. Guidance for conducting systematic scoping reviews. JBI Evidence Implementation. 2015 Sep 1;13(3):141-6. doi: 10.1097/XEB.0000000000000050

23. Peters MD, Godfrey C, McInerney P, Munn Z, Tricco AC, Khalil H. Scoping reviews. JBI Manual for Evidence Synthesis. 2020 Jan;10:10-46658.

24. Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, Moher D, Peters MD, Horsley T, Weeks L, Hempel S. PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. Annals of Internal Medicine. 2018 Oct 2;169(7):467-73. doi: 10.7326/M18-0850

25. Oliveira T, Pereira S, Zocche D, Ribeiro O. Instrumentos de Avaliação de Equipas de Alto Desempenho: Protocolo de Scoping Review. RevSALUS - Revista Científica Internacional da Rede Académica das Ciências da Saúde da Lusofonia. 2024;6(Sup):262-4. doi: 10.51126/revsalus.v6iSup

26. Aromataris E, Lockwood C, Porritt K, Pilla B, Jordan Z, editors. JBI Manual for Evidence Synthesis. JBI; 2024. doi:10.46658/JBIMES-24-01

27. Ouzzani M, Hammady H, Fedorowicz Z, Elmagarmid A. Rayyan—a web and mobile app for systematic reviews. Systematic Reviews. 2016 Dec 5;5(1):210. doi: 10.1186/s13643-016-0384-4

28. . Bardin L. *Content Analysis*. 5th ed. Edições 70; 2016

29. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, Shamseer L, Tetzlaff JM, Akl EA, Brennan SE, Chou R. The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. BMJ. 2021 Mar 29;372. doi: 10.1136/bmj.n71

30. Ballangrud R, Persenius M, Hedelin B, Hall-Lord ML. Exploring intensive care nurses' team performance in a simulation-based emergency situation, expert raters' assessments versus self-

assessments: An explorative study. BMC Nursing. 2014 Dec 17;13(1):47. doi: 10.1186/s12912-014-0047-5

31. Bursiek AA, Hopkins MR, Breitkopf DM, Grubbs PL, Joswiak ME, Klipfel JM, Johnson KM. Use of high-fidelity simulation to enhance interdisciplinary collaboration and reduce patient falls. Journal of Patient Safety. 2020 Sep 1;16(3):245-50. doi: 10.1097/PTS.0000000000000277

32. Malec JF, Torsher LC, Dunn WF, Wiegmann DA, Arnold JJ, Brown DA, Phatak V. The Mayo high performance teamwork scale: reliability and validity for evaluating key crew resource management skills. Simulation in Healthcare. 2007 Apr 1;2(1):4-10.doi: 10.1097/SIH.0b013e31802b68ee

33. Bultas MW, Hassler M, Ercole PM, Rea G. Effectiveness of high-fidelity simulation for pediatric staff nurse education. Pediatric Nursing. 2014;40(1):27-32, 42. PMID: 24757918.

34. Sifaki-Pistolla D, Melidoniotis E, Dey N, Chatzea VE. How trust affects the performance of interprofessional health-care teams. Journal of Interprofessional Care. 2020 Mar 3;34(2):218-24. doi:10.1080/13561820.2019.1631763

35. Harvey EM, Wright A, Taylor D, Bath J, Collier B. TeamSTEPPS® simulation-based training: An evidence-based strategy to improve trauma team performance. The Journal of Continuing Education in Nursing. 2013 Nov 1;44(11):484-5. doi:10.3928/00220124-20131025-92

36. Soghikian S, Chipman M, Holmes J, Calhoun AW, Mallory LA, Mallory L. Assessing team performance in a longitudinal neonatal resuscitation simulation training program: Comparing validity evidence to select the best tool. Cureus. 2024 Sep 6;16(9). doi:10.7759/cureus 68810

37. Mokkink LB, Terwee CB, Patrick DL, Alonso J, Stratford PW, Knol DL, Bouter LM, de Vet HC. The COSMIN study reached international consensus on taxonomy, terminology, and definitions of measurement properties for health-related patient-reported outcomes. Journal of Clinical Epidemiology. 2010 Jul 1;63(7):737-45. doi:10.1016/j.jclinepi.2010.02.006