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REVIEW

Key Performance Indicators: A Framework for Allied Healthcare Educational Institutions

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Background: Performance evaluation in the allied healthcare education sector is complex, making it essential for policymakers and managers to approach it comprehensively and thoughtfully to understand their performance. Hence, the development and monitoring of Key Performance Indicators (KPIs) in this domain must be considered one of the key priorities for the policymakers in AHIs.

Aim: This study aims to develop a framework for the AHIs to extract and profile the indicators, measure, and report the results appropriately.

Methods: The authors adopted a general review of the literature approach to study the primary goals of the institutional KPI framework, emphasizing the need for benchmarking while implementing KPIs and how to track performance using a KPI dashboard.

Results: The study provides the scope, relevant KPI categories, and a list of KPIs for evaluating the effectiveness of allied healthcare programs. The study findings also emphasized the need for benchmarking the KPIs and establishing a KPI dashboard while measuring and monitoring performance.

Conclusion: KPIs are considered an invaluable tool that contributes immensely to the performance monitoring process of AHIs, irrespective of the specialties. This helps to identify and guide AHIs for developing KPIs and the associated minimum data set to measure organizational performance and monitor the quality of teaching and learning. In addition, the KPI framework reported in this study is a tool to assist performance monitoring that can subsequently contribute to the overall quality of AHIs.

Keywords: key performance indicators, allied healthcare institutions, performance assessment, KPI dashboard, KPI framework

Introduction

Allied health sciences are a broad category of healthcare professionals crucial in providing comprehensive and quality healthcare services.[1] These professionals work in various settings, including hospitals, clinics, rehabilitation centers, nursing homes, and schools.[2] They collaborate with physicians and other healthcare providers to diagnose and treat patients, manage chronic conditions, and improve overall health and wellness. Allied health professionals are trained in various specialties, including physical therapy, occupational therapy, speech therapy, radiology, respiratory therapy, and many more. They have specific expertise and skills that enable them to provide specialized patient care.[3] However, these professionals are not licensed to diagnose and treat medical conditions in the same way as physicians; still, they play an essential role in supporting and complementing the work of physicians and other medical professionals.[4] One of the key roles of Allied health professionals is to provide direct patient care. This includes taking vital signs, monitoring patient

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progress, administering medications, and assisting with medical procedures. Further, they are responsible for educating patients and families on health-related topics, such as disease prevention and management, and helping patients understand how to make healthy lifestyle choices. They also keep detailed records of patient treatment plans, progress, and outcomes and communicate this information to other healthcare team members.[5]

In addition to providing direct patient care, allied health professionals collaborate with other healthcare providers to ensure the best possible patient care. This collaborative approach helps improve patient outcomes and ensures patients receive high-quality care tailored to their specific needs.[6] Allied health professionals are also responsible for ensuring that they abide by all relevant healthcare regulations and standards, including the Health Insurance Portability and Accountability Act (HIPAA) and the Occupational Safety and Health Administration (OSHA), to ensure patient safety and confidentiality.[7] They are trained in these regulations and standards and must adhere to them to ensure they provide care safely and ethically. Professional development and career improvement are essential aspects of the work of Allied health professionals.[8] They must keep up with the most recent developments in their industry as part of their professional development, attend conferences and workshops, and look for opportunities for continuing education. This helps them to improve their skills and stay current with the latest developments in their field. Many allied health professionals also seek advanced degrees or certifications to further their careers and take on more advanced roles.[9]

The Allied Healthcare Institutions (AHIs) play a vital role in the student's academic performance in pursuing a career in the allied health sciences.[10] These institutions give students the chance to improve their skills in a real-world environment and obtain practical experience, which is crucial for success in their future employment. For students to succeed academically, institutions must provide a supportive and effective learning environment that meets their needs and prepares them to cope with the demands of their chosen careers.[11] This includes providing high-quality instruction, access to resources and technology, and opportunities for hands-on learning and real-world experience. Institutions must also be responsive to the changing needs of the healthcare industry, ensuring that their programs and curricula are up-to-date and meet the demands of the job market.[11,12] This requires continuous improvement and investment in the quality of education and support services.[13] By supporting student success and preparing them for successful careers in the healthcare industry, AHIs play a critical role in improving the overall health and well-being of communities and supporting the growth and development of the healthcare sector.[10] Due to the numerous factors that must be taken into account, such as the various organizational models, financing mechanisms, governance, and resources in service provision, stakeholders' perspectives, uncertainty, and organizational fragmentation, performance evaluation in the allied healthcare education sector is particularly complex.[14,15] These factors make it essential for policymakers and managers to approach performance evaluation comprehensively and thoughtfully, considering the unique challenges and complexities of the sector. It is feasible to take into account the many stakeholders' varying perspectives and needs and develop a flexible and adaptable system to the sector's changing needs by creating and implementing a performance evaluation system at multiple governance levels.[15] The performance evaluation system should also address the uncertainty inherent in the healthcare sector, allowing for the possibility of unexpected events and changes and ensuring that the system remains relevant and practical even in the face of such uncertainty.[16] By considering these factors and designing Key Performance Indicators (KPIs) that are flexible and adaptable, it becomes possible to measure and evaluate allied healthcare education's performance effectively and drive improvement in the quality of services provided.[17]

Considering the crucial role played by the AHIs in delivering quality healthcare services, this paper explores the development of KPIs within the allied healthcare education sector. It is noteworthy that performance assessment and KPI measurement have similar basic principles across various fields; however, the usefulness of metrics may differ depending on the discipline.[18] For instance, healthcare may prioritize clinical outcomes and patient safety, whereas sales and marketing prioritize revenue generation and customer acquisition. Nevertheless, the underlying principles of establishing objectives, gathering data, examining performance, and promoting progress remain consistent across all fields. Even though the KPI framework discussed herein has specific relevance to allied health education, it holds broader relevance beyond the discipline. Thus, the proposed KPIs and their evaluation mechanisms in this paper are adaptable for enhancing performance assessment in higher education institutions, fostering continuous improvement and accountability across diverse disciplines.

Why Do We Need Specific KPIs for Allied Healthcare Institutions?

KPIs are designed to help organizations understand how well they are performing with regard to their goals and objectives. By regularly tracking KPIs, organizations can identify areas for improvement, make informed decisions, and measure their progress over time.[14,15,17] Different individuals must consistently measure and evaluate the KPIs to ensure their reliability. When KPIs are consistently applied and measured in the same way, it becomes possible to make valid and meaningful comparisons between allied healthcare institutions over time.[19,20] This consistency is key to ensuring the validity and reliability of the KPIs and the accuracy of the insights they provide.[21] KPIs for Allied Healthcare Institutions can vary depending on the specific goals and objectives of the institution. However, some common KPIs for the allied healthcare education sector include student satisfaction, student retention and graduation rates, employment outcomes, clinical experience, faculty satisfaction and engagement, program quality, academic achievements, diversity and inclusion, faculty productivity, research output, and resource utilization.[22,23] These KPIs provide a snapshot of the performance of Allied Healthcare Institutions and can be used to monitor progress, identify areas for improvement, and inform decision-making.[19] However, it is essential to note that the KPIs selected will depend on the specific goals and objectives of the institution and may vary from one institution to another (Figure 1).

Even though many KPIs are reported for educational institutions, there is still a gap in the development of KPIs for the allied healthcare education sector, especially in measuring the quality of teaching and learning and the overall performance of institutions.[23,24] The lack of widely accepted best practices and standards for measuring performance in this sector makes it difficult to compare institutions and assess their relative strengths and weaknesses.[17] However, this presents an opportunity for institutions and policymakers to collaborate and invest in developing meaningful and relevant KPIs for the allied healthcare education sector.[25] This could include exploring innovative data collection and analysis approaches and involving stakeholders such as students, educators, and employers in the development process. By developing and implementing meaningful KPIs, institutions and policymakers can gain valuable insights into the performance of the sector, identify areas for improvement, and make informed decisions to enhance the quality of education and support for students. This can lead to better student outcomes and a more robust, resilient healthcare workforce.[13,15]

The National Center for Academic Accreditation and Evaluation (NCAAA) in the Kingdom of Saudi Arabia is an accreditation body that measures the quality of all the affiliated institutions, including AHIs.[26,27] Those indicators chosen by the NCAAA are generic to all the academic programs without any specific focus on AHIs. Moreover, no studies examined such data from a sole AHI domain to extract and profile the indicators, measures and results in the institutions have chosen to report. Realizing this research gap, the authors have undertaken this study with the following three-fold objectives: (i) Develop a KPI framework for AHIs and propose a list of KPIs for evaluating the effectiveness of allied healthcare programs; (ii) Address the need for benchmarking during the implementation and monitoring of KPIs and (iii) Address the need to establish a KPI dashboard as a data visualization and monitoring tool.

Methodology

On thorough exploration of the literature and to fulfill the research gap, this study aims to identify and provide guidance for developing KPIs and associated minimum data sets to measure organizational performance and monitor the quality of

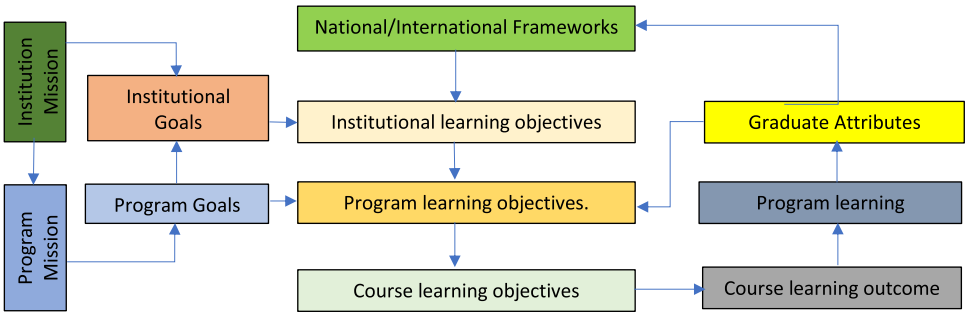

Figure 1 The relationship between the primary goals of an institutional performance framework is depicted schematically.

teaching and learning in allied healthcare institutions. Minimum data sets refer to the minimum amount of information required to monitor the quality of teaching and learning through KPIs. The authors comprehensively reviewed relevant literature from various electronic databases, including Scopus, PubMed, Web of Science, media reports, and published government reports. The electronic search was performed using relevant keywords tailored to the specific subject, encompassing "key performance indicators", "allied healthcare institutions", "performance assessment", "KPI Dashboard", and "KPI framework". This approach was employed to both broaden and refine the search parameters. The following inclusion criteria were adopted: Original articles, review articles, and conceptual papers published between January 1995 and December 2023, and only those written in English were considered. In addition, any works not published in English or outside the specified time frame were excluded. The authors outlined specific guidance based on an analysis of evidence from an extensive literature review, as presented in Table S1. After applying these criteria, 434 publications were then retrieved. As part of the title screening, 204 publications were sorted according to the removal of duplicates. In addition, the abstracts of these selected publications were reviewed for relevance, and 134 irrelevant publications were removed, leaving 70 publications. Based on the homogeneity of results reported in published documents, the authors presented the framework for AHIs in three main sections, namely, KPI development, the need for benchmarking in the implementation of KPIs and the establishment of a KPI dashboard to track performance. This framework would benefit all stakeholders, including the government, accreditation bodies, reviewers, auditors, professional organizations, faculty, students, and employers in tracking performance.[28]

KPI Development and Implementation in Allied Healthcare Education

A recent study by Badway et al stated that Higher Educational Institutions (HEIs) need to define and evaluate KPIs to improve their quality (Figure 2).[29] KPIs are considered computable values that describe the efficiency of an institution and how it achieves core objectives. HEIs utilize KPIs to ascertain whether they are moving ahead on the right path. Therefore, such KPIs are crucial in enhancing quality and achieving goals.[29] In addition, KPIs gently guide the leadership in the right direction to improve academia and are used in different academic medicine fields.[3,9,30] These measures are considered a means of providing evidence that indicates quality and serve as a foundation for raising the standard of instruction offered by allied healthcare institutions to the students. The institution's leadership must determine outcome measures based on the quality indicators to identify what elements need to be modified, which areas must be improved, and/or what areas must be developed to fulfill the organization's objectives.[11,22] Specifically, in the Saudi Arabian context, the NCAAA defines the national-level accreditation standard and a set of KPIs for evaluating the quality of higher education, including allied health education programs.[31] All the Allied Healthcare Educational (AHE) programs in Saudi Arabia must meet the NCAAA criteria to achieve national accreditation and hold a unique value in the competitive higher education market. Therefore, these AHE programs use unique KPI-deriving methods to improve their performance and the quality of higher education.[32] Santana et al identified nine measurements that each KPI should meet, and it should be viz. precisely well defined; vital target enhancements; reliable and valid; implemented only after risk adjustment; implemented with reasonable cost; implemented with low data collection effort; Global (ready for an overall evaluation). In addition, each KPI should target vital enhancements and achieve results that can be easily interpreted.[33]

While developing KPIs for AHE programs, several categories of indicators need to be considered. The utility of these indicators should be chosen based on the type of data, its purpose, and its intended use to track or predict performance. Considering the categories stipulated in Table 1, the authors suggested some essential KPIs to measure and track the quality of AHPs (Table 2). These KPIs are grouped under specific themes such as stakeholders feedback about the quality of AHPs (Employer, Industry, Alumni, Clinical Sites, etc.), quality of teaching and learning, academic program governance, employee performance, institutional resources, research outcomes, and community service contributions.

The Need for Benchmarking While Implementing KPIs

Upon defining the KPIs for the domain of allied healthcare education, it is paramount to benchmark performance with a comparable academic program either within or outside the institution, and it is an essential step while implementing KPIs.[34,35] A previous study by Paliulis and Labanauskis (2015) stressed the importance of benchmarking and stated that

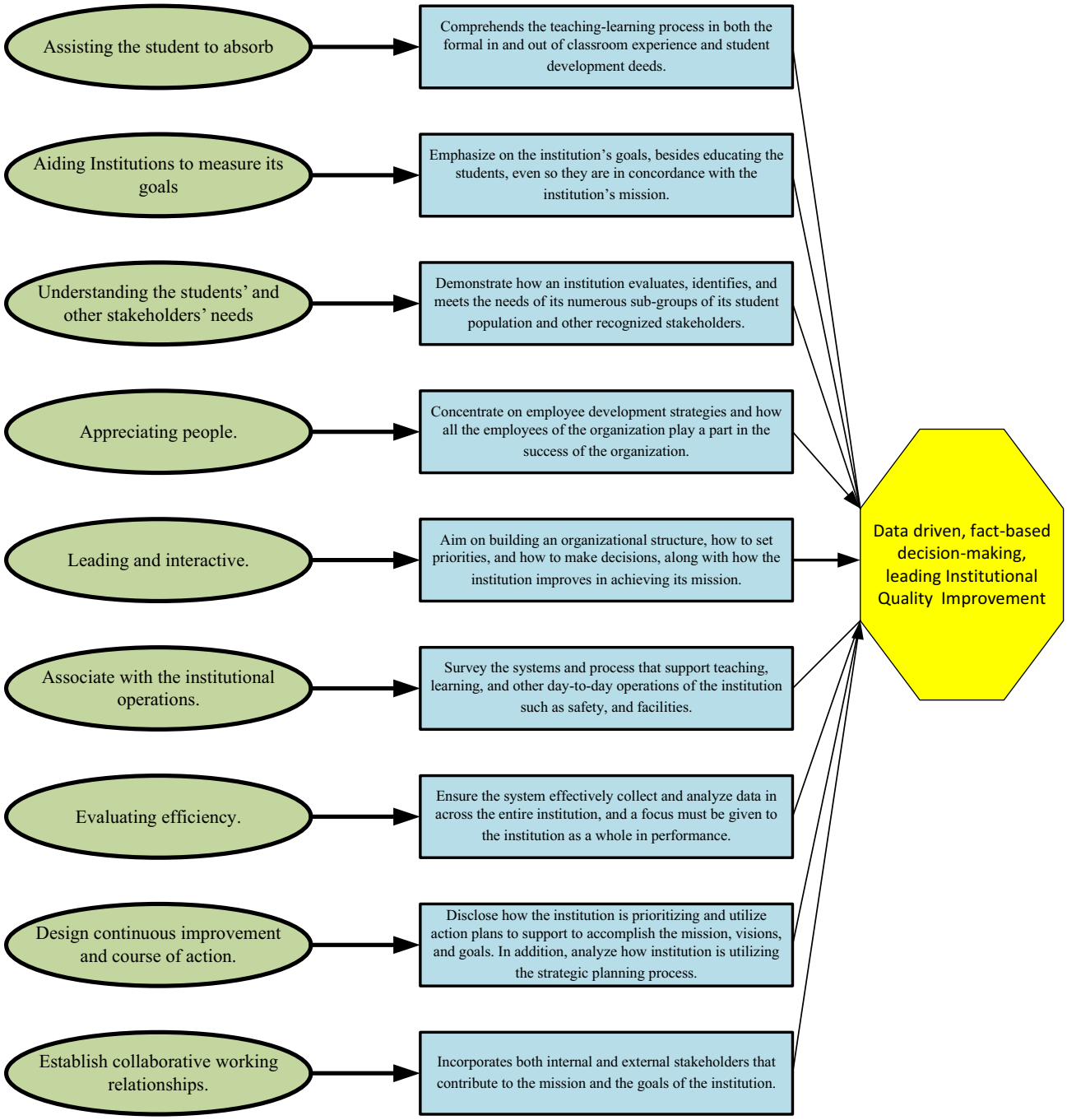

Figure 2 Scope of KPIs in measuring Institutional Quality.

many HEIs intended to learn from each other and share good practices.[36] Alstete (1995) reported that benchmarking aimed to give administrators with an external point of reference or standard for evaluating the quality and cost of institutions' internal activities, processes, and good practices.[37] This concept is based on comparing performance, identifying gaps, and change in the management process.[38] A recent study by Tasopoulou and Tsiotras (2017) indicated that benchmarking in HEIs offers ideal standpoints and practices for improving academic excellence.[39] However, different data definitions adopted by benchmarking partners are critical issues to address while doing this benchmarking exercise. Thus, to overcome this problem, the benchmarking partners should adopt unique data definitions.[40]

Table 1 Categories of Performance Indicators

Category	Definition	Example
Input indicators	These KPIs are related to the resources that contribute to value creation.	Number of employees.
Process indicators	These KPIs are related to the activities involved to achieve the outcome and create value.	Time it takes to complete a particular student cohort.
Output indicators	These KPI's are related to the created outcome. They can be measured in terms of quantity, quality, or both.	Graduation rate (Quantity) Employability rate (Quality) or national level licensing exam passing rate
Quantitative Indicators	These are the KPIs that can be measured numerically	Funding in research
Qualitative Indicators	Qualitative indicators are the KPIs that cannot be measured by number	Employee satisfaction
Impact indicators	Impact indicators describe progress made towards higher-level goals.	Contributing to the strategic goal or requirements of an external accrediting body

Table 2 Proposed List of KPIs for Evaluating the Effectiveness of Allied Healthcare Programs

Sl. No	KPI	Numerator	Denominator	Expression of Outputs
I	Progress of an academic program to its goals and strategic objectives			
1	Percentage of achieved indicators of an academic program operational plan objectives	Number of performance indicators achieved the target in the Program Operational plan objectives during the academic year	Total number of indicators targeted for these Program Operational plan objectives in the same year	Percentage
II	Stakeholder's feedback			
2	Students' evaluation of quality of learning experience in the programs	Sum of the scores given by the student respondents to the Program quality evaluation survey	Number of students filled the Program quality evaluation surveys	Mean
3	Students' evaluation of the quality of the courses	Sum of the scores given by the student respondents to the Course quality evaluation survey	Number of students filled the Course quality evaluation surveys	Mean
4	Students' satisfaction with the Learning resources offered	Sum of the scores given by the final year students who responded to the Learning resources survey	Number of final year students expected to fill the Learning resources survey	Mean
5	Employers' evaluation of the Program graduate's proficiency	Sum of the scores given by the employers who responded to the employers' survey	Number of Stakeholder expected to fill the employers survey	Mean
6	Students' satisfaction with the Lecturing skills of teaching staff	Sum of the scores given by the final year students who responded to the Lecturing skills survey	Number of final year students expected to fill the Lecturing skills evaluation survey	Mean
III	Research outcomes			
8	Percentage of faculty members with at least one publication	Number of full-time faculty members who published at least one research during the year	Total No of full-time members of faculty members employed in the same year	Percentage
9	Rate of published research per faculty member	Total number of refereed and/or published research by fulltime or equivalent faculty members during the year	Total number of fulltime or equivalent faculty members working in the Program during the same academic year	Ratio

(*Continued*)

Table 2 (Continued).

Sl. No	KPI	Numerator	Denominator	Expression of Outputs
10	Citations rate in refereed journals per faculty member	Total number of citations in refereed journals from published research for full-time or equivalent faculty members in each Gregorian year	Total number of published research from full-time or equivalent faculty members in each Gregorian year	Ratio
IV	Community Services			
11	Students' satisfaction with the quality of community services offered	Sum of the scores given by the final year students who responded to the community services evaluation survey	Number of final year students expected to fill the community services evaluation survey	Mean
V	Quality of Teaching and Learning			
12	Program Complete rate for Students in the specified period	Number of students who successfully completed the programs in minimum time as stipulated in the study plan	Total Number of students admitted in the program 4 or 5 years before (ie, it is related to a specific batch of the students (Cohort) who started the program 4 or 5 years before)	Percentage
13	First-year students retention rate	Number of students continuing their studies at the end of first year of the undergraduate Program	Total Number. of students enrolled in first year of the undergraduate Program	Percentage
14	Students' performance in the professional and/or national examinations	Number of students or graduates who were successful in the professional and / or national examinations in each academic year	Total number of students or graduates who appeared in the professional and / or national examinations in the same academic year	Percentage
15	Average number of students in the class	Number of students per class (in each teaching session/activity: lecture, small group, tutorial, laboratory, or clinical session) in the program during the specified academic year	Total number of Classes in the same academic year	Ratio
16	Proportion of teaching staff with doctoral qualifications	Number of teachings with a doctoral degree during an academic year	Total number of teaching staff employed in a program during an academic year.	Proportion

Furthermore, while developing the KPI, it is necessary to always derive indicators from users by considering their aims in using those indicators and what values they provide to the academic program. Moreover, KPIs should be linked with relevant quality standards and support academic programs' planning process.[41] As such, it is recommended that academic programs should group a set of KPIs by combining similar components to have a limited/optimal number of KPIs to measure.[42] Also, chosen KPIs should be capable of creating an integration of information in a way that could be used as parameters to measure the system's reliability. Finally, indicators should respond flexibly to some raised problems, changing circumstances, and new issues.[21]

The Need for Establishing a KPI Dashboard

The dashboard, in other words, a Gantt chart or a target-reporting tool, is a simple management tool to manage the results and efforts and to create visibility.[43] Additionally, it is a tool that lists the materials needed to carry out scheduled activities in the form of a specific software platform, spreadsheet, or calendar.[44] Dashboards can serve as a foundation for creating input indicators that track whether a mission or goal is achieving significant milestones in accordance with the original plan because they describe the timing and sequence of key events (such as getting approval to move forward with an initiative, hiring staff, securing equipment, etc).[45] The dashboard must be designed in a way that has access not only to the leaders but also accessible to every stakeholder by providing the critical results instantly and transparently,

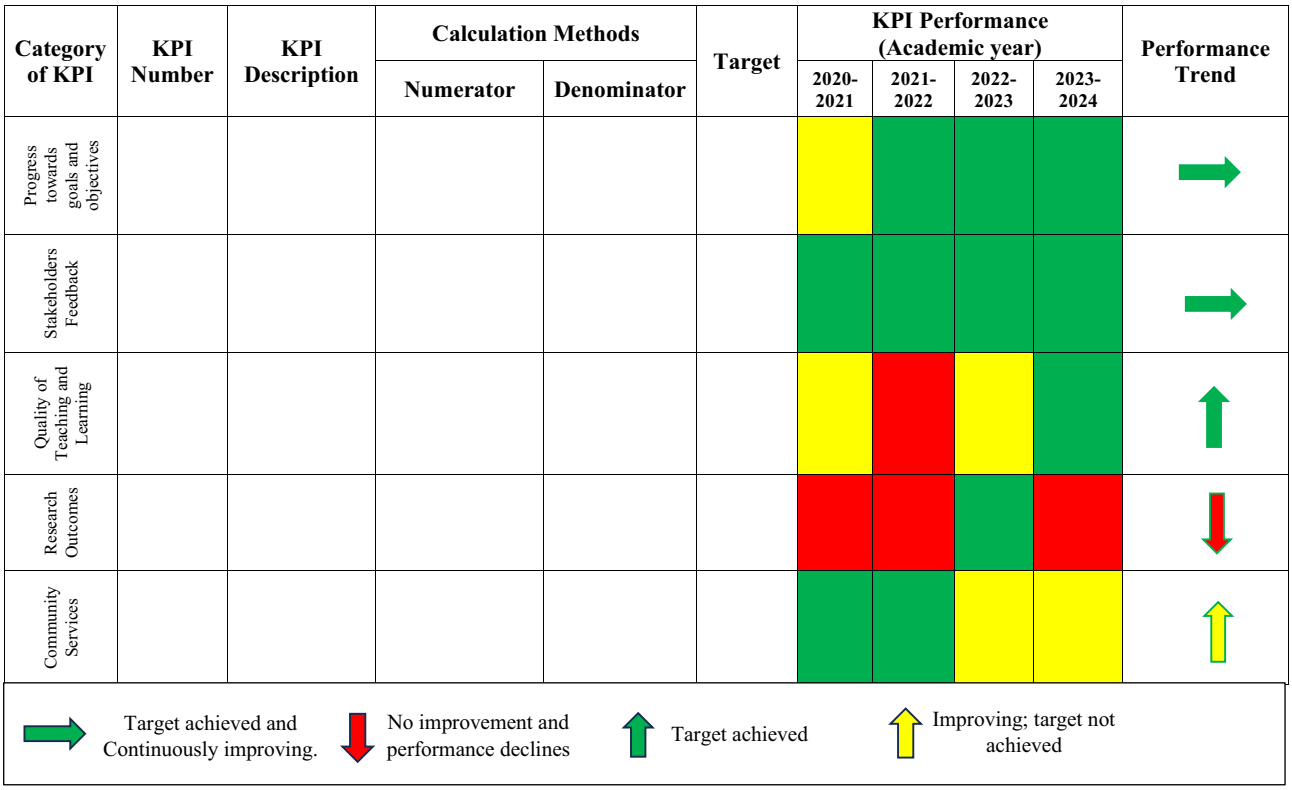

Figure 3 Proposed KPI Dashboard model for Allied Healthcare Institutions.

perhaps influencing the outcome.[29] The dashboard will let the relevant authorities read/understand the results, set or revise the goals proactively, empower the people to improve personal and program-specific performance, and find issues regarding the strategy.[45] Taking all these key aspects of the KPI dashboard into account, the authors propose a model KPI dashboard for the AHIs to adopt (Figure 3). KPI dashboards help stakeholders discover their strengths, and ultimately, they can help align multiple goals, address issues with significant cost reduction, and improve resource utilization.

Discussion

On exploration of the existing literature, the authors observed that there is no KPI framework exclusively focusing on allied healthcare institutions, and most existing ones focus on higher education institutions and academic programs, in general, which face several limitations, including generic metrics without specific relevance to academic programs focusing on allied healthcare, the inadequate utility of benchmarking data, and the lack of interdisciplinary collaboration.[29,46,47] Accordingly, in this study, the authors sought to determine and provide KPI development guidelines and the minimal data sets required to monitor the efficiency of teaching and learning in allied healthcare institutions. We also concentrated on benchmarking and the benefit of using the KPI dashboard to track how well the allied healthcare institutions are performing. In short, this review emphasizes that KPIs cannot alone improve quality; instead, they serve as flags or alerts to identify good practices and provide comparability within and between similar services, where there are opportunities for improvement and a more thorough investigation of standards is required. The foremost goal of KPIs is to contribute to providing high-quality, safe, and effective service that meets the needs of service users. Data used to support KPIs should be standardized, with uniform definitions, to ensure that it is collected consistently and supports the measurement process, facilitating meaningful comparison. This can be achieved by developing a minimum data set containing a listing of standardized data to support performance measurement with KPIs.

Three drivers can encourage institutions to improve the quality of teaching and learning; they deliver professionalism, regulation, and market forces.[48] By a system of governance, members of a profession create and uphold norms about

professionalism for its members. In regulation, the government, independent regulators, the accrediting organization, or the council set requirements that everyone must follow, elevating the standard of services. Last but not least, consumers can influence market dynamics to increase the quality of their employees by choosing students from schools with good quality and performance records. Assessing the quality of teaching and learning has become increasingly important because we need to measure them to determine if improvements are being made.[49] Although it is a contributing factor, quality measurement alone does not lead to improved performance.[48] However, performance measurement improves quality in several ways.[50] First, it encourages improvement by allowing service consumers to base their decisions on quality standards, motivating suppliers to raise their game in order to draw in more clients. Second, when performance measurement reveals that there is room for development, professionals have an innate motivation to up their level of performance. The desire to increase or maintain performance in comparison to others and the dependability of the quality and safety of the services they provide is a final way that performance measurement promotes improvement. This is accomplished by contrasting the performance of several individuals, groups, or divisions.

The nature of allied healthcare services is such that they are often provided by diverse healthcare professionals, each with their own skills and areas of expertise. As a result, allied healthcare organizations need to have specific quality management strategies to ensure that their services are delivered consistently and to a high standard across all practice areas. This helps ensure patients receive the best possible care, regardless of which healthcare professional they see. Fiona Jenkins and Robert Jones, in their work on quality management in healthcare organizations, argue that specific quality management strategies and KPIs are necessary for allied healthcare organizations for several reasons.[22] They drew various ideas in the context of quality management and strategic planning, including performance measurement, Lean Six Sigma, balanced scorecards, dashboards, TQM, and benefits realization in developing allied health professionals' quality management matrix. They concluded that allied health services' vision, objectives, and policies should outline their purpose, plans, and implementation strategies and must be included in frameworks for strategy. As stated in this study, research also illustrates the need to support quality management initiatives in AHPs.[24] The Key Performance Indicators can be displayed in the dashboards, which can be developed through proper discussions with the direct stakeholders. Directly involving stakeholders such as teachers, students, and employers in the development of KPI frameworks can bring numerous benefits. These benefits include ownership, alignment with goals, real-world relevance, diverse perspectives, accurate data, acceptance, continuous improvement, increased accountability, improved communication, and higher satisfaction.[51,52] The input provided by stakeholders ensures meaningful KPIs, fosters commitment, promotes a culture of collaboration and improvement, and ultimately leads to more effective performance management. Such dashboards help with strategic and clinical decision-making, staff allocation, and awareness of allied health by providing information on opportunities for service development.[53]

Benchmarking is getting wide acceptance across the globe, including healthcare services, since it is the common practice adopted in quality management to compare the performance metrics of the institution with comparable institutions. This practice of comparing institutions will undoubtedly help improve the performance of any institution for continuous improvement by shifting the yardstick and understanding the strengths and weaknesses. Many scholars suggest benchmarking to help institutions adopt the best practices to attain continuous quality improvement.[35,40] Attaining national and international rankings is yet another mode of continuous monitoring of performance in AHIs. However, suitable models or research still need to be made available to fit with the AHIs to adopt a suitable ranking prototype.

An internal performance assessment's results will help institutions learn from its achievements and errors.[54] In addition to monitoring performance, the assessment enlightens the institution on the training needs and accountability. It identifies the areas that need improvement to provide adequate feedback to the faculty and staff. Thus, everyone, including healthcare institutions, obviously expects, needs, and deserves quality indicators, performance assessment, and accountability.[55] Besides, in this article, we recommend choosing and developing KPIs that are locally and nationally relevant. This is because if the chosen KPIs do not provide any insight or are not pertinent to the institutional performance, it indicates that they need to be clearly connected to the plan.

The authors also suggested Donabedian's classification for grouping the performance and the indicators as a valid model for any healthcare organization, including the AHIs. The three-component approach of Donabedian (structure,

process, and outcome) for measuring the KPI optimizes the quality of care.[56] The potential explanation is that the three domains contain process and outcome characteristics. Research also indicates significant correlations between the quality domains of Donabedian's structure-process-outcome model, which is a reliable framework.[57] According to a study on the hospital accreditation system and KPIs, it is beneficial to analyze different factors of hospital performance indicators and how they vary over time to conduct more thorough research and comprehend how well the system works.[58]

Identifying and selecting appropriate performance measures is a challenging task for quality managers in AHIs who conduct performance evaluations. To achieve the objectives of performance evaluation, it is necessary to thoroughly analyze the barriers to evaluating performance and customize strategies to overcome them, as suggested by Lizarondo et al.[15] There are several barriers to evaluating performance of AHIs. Firstly, AHIs offer diverse academic programs, which require different performance measures.[59] Secondly, obtaining accurate and reliable data can be difficult, especially with limited resources regarding finances and personnel.[60] Thirdly, regulatory compliance may necessitate specific performance measures.[15] Fourthly, AHIs often involve interdisciplinary teams, making it complex to measure individual and team performance.[61] Lastly, staff may resist introducing new performance measures or evaluation systems, perceiving it as an additional administrative burden or fearing negative consequences based on performance metrics.[15] Once these challenges and obstacles have been addressed, automating key performance indicators (KPIs) and developing an interactive KPI dashboard with visual representations of KPIs and monitoring provisions for tracking performance progress can help quality managers closely monitor the KPIs of AHIs and intervene at the appropriate time. If implemented and monitored, the quantitative statistics provide a reasonable target to guide the AHIs to improve organizational performance and achieve the predetermined goals and objectives. Further, performance measurement plays a crucial role in attaining academic accreditation and securing an illuminating spot in the national and international ranking systems, to which the senior administration of the institutions should pay more attention.

Conclusion

Improving the quality of education requires developing and implementing performance measurements using scientifically valid and reliable KPIs. This study is the first of its kind to address KPI development and implementation for AHIs. The authors also provided insights into the scope and factors that must be measured to track the allied healthcare education system's quality. Further, it is emphasized that performance monitoring requires high-quality data, which can only be obtained through a systematic method to guarantee that data is gathered uniformly both inside and between organizations. A tool frequently used to assist in performance monitoring that can subsequently contribute to performance improvement is the KPIs. As such, this study provided a list of sixteen KPIs under five domains to track the performance of AHIs. These KPIs contribute immensely to the performance monitoring process of AHIs, irrespective of the specialties. In addition, the authors highlighted the importance of benchmarking while measuring and implementing KPIs and the need to develop a KPIs dashboard to track performance. As the delivery of quality education depends on teaching faculty, leadership team, and administrative staff with various information needs, KPIs serve as a resource for all personnel and outline key points to consider while developing an improvement plan.

Future studies should focus on ascertaining stakeholders' feedback about monitoring KPIs and their influence on the quality of higher education programs. Further, using the KPI framework reported in this study, more exploratory studies are required to ascertain the impact of these KPIs in measuring various dimensions of quality prevailing in different allied healthcare programs. Lastly, additional research is needed to assess the impact of benchmarking during KPI analysis in improving the quality of Allied Healthcare education programs.

Ethical Statement

In accordance with the nature of this manuscript as a review paper and considering that it does not involve original research, data collection, or experimentation on human subjects, ethical approval was not deemed applicable for this study. As such, no formal ethical review process was undertaken. This paper synthesizes existing knowledge and literature in the field, and all information is derived from publicly available sources.

Disclosure

The authors report no conflicts of interest in this work.

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