



## ***Methods of evaluating health performance in hospitals***

### ***Case study: Metlili Public Hospital Institution***

*Zighem SIRADJ\**

*University Center of Illizi-ALGERIA  
The laboratory of development modern business  
economics and improving their performance in the Tassili  
region*

*siradj.zighem@cuillizi.dz*

*Imane BEBBA*

*University Center of Illizi-ALGERIA  
The laboratory of development modern business  
economics and improving their performance in  
the Tassili region*

*imane.bebba@cuillizi.dz*

#### ***Abstract***

*This study aims to identify the methods and indicators of health performance evaluation in public hospital institutions, and for this purpose the descriptive approach was relied upon, by presenting the most important research literature that discussed the subject of health performance evaluation indicators. After analyzing the indicators, the study concluded that there is a (positive) relationship between performance indicators and health performance evaluation of hospitals, in addition to the fact that this public hospital institution in Metlili does not rely on objective indicators capable of determining its actual performance level.*

#### ***Article info***

*Received  
December 16.2024*

*Accepted  
January 22.2025*

#### **Keyword:**

- ✓ *Performance  
Evaluation  
Indicators*
- ✓ *Health  
performance*
- ✓ *efficiency*

\* Corresponding author

## 1. Introduction

Health care is considered a legitimate right for every citizen based on the decisions of the International Group of the Universal Declaration of Human Rights in 1948. This is what prompted the Ministry of Health in Algeria to pay more attention to this aspect. By achieving its main objectives, development goals are achieved in general, and therefore it has become necessary to pay attention. The health performance of hospitals is evaluated by indicators of performance, especially Public Hospital Institutions, by referring to the standards and indicators agreed upon by the majority of researchers, the effects of which appear directly during the analysis of the results achieved based on the expected results, whether the study of these results is quantitative or qualitative. Or more precisely, identifying indicators and standards that contribute to comparing actual performance with the expected performance, and in light of which the success or failure of the Public Hospital Institution in its function can be assessed.

The importance of this research lies in the fact that it addresses a sensitive issue that is considered one of the most important economic and social topics that guarantee the achievement of stability in the country and contribute to achieving sustainable development, which is the role of performance indicators in evaluating the health performance of hospitals and highlighting the most important global indicators, as it was conducting the study on the Public Hospital Institution in

Metlili since it plays an important health center in the region.

Research has like problem: The process of evaluating performance in Public Hospital Institution must be built on objective foundations based on global indicators. The process of evaluating performance in health organizations must also be activated. It must be a continuous and recurring phenomenon supported by scientific foundations of oversight, despite the presence of numerous studies on the subject. However, most of them indicate that there are problems related to the evaluation process itself, the prioritization of it by higher authorities, and the lack of interest in the results of the evaluation, in addition to the quality of indicators appropriate for evaluation in Public Hospital Institution. On the basis of the above, the problematic features of this research emerge, which can be formulated in the following question: To what extent is reliance on health performance evaluation indicators in the Public Hospital Institution Metlili? And What is its performance level compared to the health performance levels of international hospitals?

To address the problem, the following two sub-questions were formulated:

Are international indicators used to evaluate performance in the Public Hospital Institution in Metlili?

Can the health performance of the Metlili Public Hospital Institution be considered close to the international level?

As a provisional explanation for the sub-questions, the following hypotheses were formulated:

The first is: Indicators, some of which are international, are used to evaluate health performance. And the second: There is fluctuation in the performance of the Public Hospital Institution in Metlili according to the health performance evaluation process.

And we chose the Public Hospital Institution in Metlili as a model for evaluating its performance using a number of global indicators, and to answer these two questions, the research was divided into the following axes: the first axe : The theoretical aspect of performance evaluation and health performance of Public Hospital Institution. The second axis: Indicators for evaluating the performance of Public Hospital Institution were presented, and a case study of the Public Hospital Institution in Metlili was presented. The study concluded that the health performance of the Public Hospital Institution in Metlili was generally efficient, despite the absence of adopting a fixed policy for evaluating performance, which in turn led to the adoption of administrative decisions that were not based on a realistic vision of the health performance of the Public Hospital Institution, which necessitated the creation or improvement of an information base. In general, it helps to establish an efficient and effective system to evaluate the health performance of the hospital, based on which strategic and operational administrative decisions are made

## **2. Generalities about performance evaluation and Health performance:**

The subject of performance evaluation has received a great deal of attention among researchers interested in the field of

developing service organizations, especially health ones. This is based on the growing interest of governments in improving their performance as much as possible, given its positive impact on improving economic, social, and even political activities. Many studies have emerged. Definitions about the concept of performance evaluation include that it is: a partial process within the scope of administrative activity. It is more comprehensive than oversight. If administrative oversight is the process that aims to verify the required achievement and show the extent of deviation from goals, then performance evaluation is a tool of administrative control. (Fahlevi, Aljuaid, & Saniuk, 2022, pp. 40-42)

### **2.1 The concept of healthy performance:**

Because performance is a multidimensional and dynamic concept, it is not possible to give a fixed definition. During the past two decades, many researches and studies have been conducted related to developing the concept of hospitals performance. To know the basic concepts related to hospital performance, cognitive visualization was used based on knowledge analysis and social network analysis. (Markazi-Moghaddam, Arab , Ravaghi, Rashidian , Khatibi , & Zargar Balaye Jame , 2016, p. 23). The hospital's health performance is determined from the perspective of achieving specific goals, whether medical or administrative. In general, health performance is divided into the following groups: (1) functional status, risk status, and well-being; (2) costs; (3) Satisfaction with health care and pain benefit waiting(4) Clinical outcomes. They can be used to monitor staff productivity, increase quality of care, reduce costs, and increase patient satisfaction (Karami, Fatehi , Torabi , Langarizadeh , & Safdari , 2013, p. 36)

We can conclude from the above that the concept of health performance came as a result of the increasing need to control costs, ensure sustainability, reduce variation in health care provision, ensure transparency and accountability, and provide effective and safe health services. Health performance focuses on the patient person, improving patient clinical outcomes and satisfaction, where the goal is to maximize overall patient well-being and health outcomes.

## **2.2 The concept of health performance evaluation**

With regard to health performance evaluation, it does not differ in essence from performance evaluation in general. Many definitions have been provided for health performance evaluation, but each of them is specific to a specific field, although they agree on the same meaning. Muhammad Khalifa and Parwaiz Khaled defined it as a means of monitoring, measuring and managing the performance of health care to ensure effectiveness, efficiency, equity and quality. (Khalifa & Khalid, 2015., pp. 459-466)

While Lord Calvin defined it as the stage in which the leader can measure what he is talking about in numbers. If it is the opposite, that is, he cannot express it in numbers, then his knowledge of what he is talking about is weak and unsatisfactory. This may have been the beginning of knowledge, but he had hardly reached the stage of knowledge in his thoughts. (Arora & Kaur, 2015). As for what Van & Shafagatova concluded in evaluating health performance, it is effectiveness and efficiency in health performance. Effectiveness is achieving outputs and even desired results, and efficiency is using the least possible number of inputs to obtain these outputs. The bottom line in the definition is that evaluating health performance It is the analysis of

purchasing inputs at the cheapest possible price. (Van Looy & Shafagatova, 2016, p. 1797)

Therefore, we can say that evaluating the health performance of hospitals focuses on health care in terms of quality, volume of activity, costs of performing the service and its timing. (Carini, Gabutti, Frisciale, Di Pilla, & Pezzulo, 2020, pp. 11-13).

We can say from the previous definitions of performance evaluation that it is a process of comparison between actual performance and planned performance, for the purpose of discovering deviations and correcting them, that is, identifying strengths and improving them, identifying weak points, and working to reduce them using various management control systems.

## **2.3 Criteria for evaluating health performance**

### **2.3.1 Effectiveness and safety standards**

The concept of effectiveness in institutions is one of the most prominent indicators adopted in measuring the extent to which the institution achieves its goals and the extent of its interaction with the environment in terms of exploiting available resources. (El-Gazar & Zoromba, 2021, pp. 03-04)

Effectiveness measures are the care/intervention/procedure provided that is relevant to the patient's needs based on established standards. Care, intervention or any action that achieves a desired outcome. (Nik Hisamuddin, R. & Tuan Hairulnizam, T. K, 2022, pp. 07-09)

Safety means avoiding or reducing the actual acceptable limits of potential harm from the health care administration or environment in which health care is provided. Among its indicators we find: deaths, unplanned readmission to hospital, hospital-acquired infections, safety of

maternity and cancer services. (Carini, Gabutti, Frisicale, Di Pilla, & Pezzulo, 2020, pp. 11-13)

We find that the effectiveness of health performance indicates the extent to which the goals of the health system are achieved to improve the health of the individual and society. It can be defined and measured through several elements and indicators that can be summarized as: Access to health services, quality of care, cost efficiency, health system integration, patient satisfaction, prevention and awareness, health system robustness. (Peng , Fahui, & Imam , 2020, pp. 251-260)

### **2.3.2 Efficiency standards**

Efficiency means the organization's use of available resources to achieve goals, whether these resources are material or human, in a rational manner. Efficiency can be measured through the equation:  $\text{Efficiency} = \frac{\text{actual outputs}}{\text{planned standard outputs}}$ . The closer the result is to one, the actual energy outputs are equal to the planned standard energy or close to it, meaning that the loss leads to zero. Among its indicators we find: cost and length of stay. (Alatawi, Niessen, & Khan, 2020, pp. 06-08)

As we analyze the performance of hospitals in general and work to evaluate the efficiency of their performance, we find that they depend on a variety of standards and indicators that help in evaluating health performance and management effectiveness. We can summarize some of the main criteria that may be used to determine the efficiency of hospital performance:

- Clinical quality indicators, safety indicators, operational efficiency, patient satisfaction, technology and infrastructure efficiency. (Ferreira, Nunes, & Marques, 2020, pp. 355-375)

### **2.3.3 Responsiveness and accessibility standards**

The quality of service provided to patients. Where they should be treated with dignity, maintained confidentiality, and encouraged to participate in choices about their care. Accessibility also expresses the ability to obtain health care in the right place, at the right time, regardless of income, physical location, and cultural background. Among its indicators we find: ease of access to the emergency department, waiting time, and length of wait for specialized care. (Febres-Ramos & Mercado-Rey, 2020, pp. 397-403)

We can interpret them as those standards related to the factors that affect individuals' ability to access health care and the quality of services provided. Here are some important criteria and elements to consider:

Cost of services, health insurance, geographical location of services, means of transportation, schedule of services, Codification and waiting, linguistic and cultural access. (Burger & Christian, 2020, pp. 43-55)

## **2.4 Criteria and indicators used to evaluate health performance:**

### **2.4.1 .Standards and indicators**

Standards and indicators in health care provide a framework for measuring and evaluating health performance. These criteria are used to determine the level of healthy performance he receives The individual or society. We must differentiate between For two concepts: Standards and indicators in health care provide a framework for measuring and evaluating health performance. These standards are used to determine the level of health functioning an individual or community receives. We must differentiate between the two concepts:

\*Standards: are a set of recognized principles or goals that must be achieved to ensure quality health care. Standards are applied to ensure that health services are provided with the highest levels of quality and safety. (Decker, Alinier, Crawford, Gordon, Jenkins, & Wilson, 2021, pp. 27-32)

\*Indicators are quantitative measures or outcomes used to evaluate the performance of healthcare institutions based on established criteria.

Indicators are a means of providing a quantitative assessment of health performance based on available data and information. (Steinfert, et al., 2023, pp. 722-743)

Performance indicators are a tool used to monitor and estimate the extent to which the main and subsidiary functions (administrative, clinical and support activities within the hospital) have been achieved. Indicators are not direct standards, but rather act as a neutral, examining lens that highlights important questions about health performance and can lead to identifying areas for development. By monitoring these indicators, the hospital's health performance can determine whether the performance is consistent with what is required and planned. (Mirescu & Popescu, 2023, pp. 26-33)

Performance indicators focus on measuring and evaluating the performance of hospitals for a previous period of time. They are quantitative measurements that use data and information related to health performance in the balance of inputs, processes and outputs, and then evaluate them from various aspects. Thus, they give an immediate warning of deviations as they act as alarm clocks for the purpose of improving performance, and they provide a reference basis for the changes

that are required to be made to achieve the desired level.

There are several models for measuring and evaluating performance, and quantitative standards have been used to measure quality, by developing a simplified model derived from the "Donabedian Avedis" model using the professional indicators method due to it being considered more objective and compatible with the model used in Algerian hospital institutions:

A model for measuring and evaluating performance using professional indicators. According to this model, indicators are divided into three main groups, from which sub-measures are divided as follows: (Višnjić, 2012, pp. 53-58)

A-Organizational structure standards  
Inputs:

They are represented by indicators that indicate the institution's inputs in terms of human, material and financial resources and structures that qualify it to perform its tasks:

- Indicators for measuring the performance of human resources: doctors, paramedics, administrative staff and professional workers.
- Indicators to measure the performance of material and financial resources: number of beds, ambulances, pharmacies, laboratories.

We find ways to measure some indicators:

\* Number of doctors: It is measured by the number of beds in relation to the number of doctors. The World Health Organization set the number at one doctor for every four (4) beds. If the percentage decreases, the indicator indicates the possibility of better performance.

\* Number of nurses: It is measured by the number of beds in relation to the number of nurses, that is, the number allocated to

each nurse out of the total beds. The World Health Organization set the number at one nurse for every two (2) beds. If the percentage decreases, the indicator indicates the possibility of better performance..

\* Number of pharmacists: It is measured by the number of beds in relation to the number of pharmacists, meaning the responsibility of each pharmacist for the number of beds. The World Health Organization set the number at one pharmacist for every 100 beds. If the percentage decreases, the indicator indicates the possibility of better performance.

\* The number of laboratory analysis specialists: It is measured by the number of beds in relation to the number of laboratory personnel, that is, the number of beds allocated to each laboratory analysis specialist. The World Health Organization set the number at one laboratory analysis specialist for every 100 beds, meaning that if the percentage decreased, the indicator would indicate the possibility of better performance.

\* Number of employees: It is measured by the number of beds in relation to the number of employees in the hospital, in other words, what is allocated to each employee out of the total beds. The World Health Organization set the number at one employee per bed, so the lower the percentage, the more the indicator indicates the possibility of better performance.

\* The number of nurses per doctor: It is measured by the number of nurses in relation to the number of doctors, that is, the number of nurses assigned to each doctor. The World Health Organization set the number at five nurses per doctor. When the percentage increases, the indicator indicates the possibility of better

performance. (Pourmohammadi, 2018, pp. 07-10)

B-Activity and process metrics Procedures:

It is represented by indicators that indicate the activities and processes represented by the completed tasks that enable achieving results. Several indicators can be used, including: Average length of stay, bed turnover rate, bed occupancy rate, autopsy rate, number of caesarean sections, and percentage of broken medical devices. Among the most commonly used indicators are:

- Patient stay rate: or the average length of stay. This indicator expresses the efficiency of the health performance available to those hospitalized during a certain period of time. The World Health Organization has set the period as 7 days. A decrease in the rate indicates an increase in the efficiency of the health performance available to hospitalized patients, and on the contrary, an increase in the rate indicates an increase in the efficiency of the health performance available to hospitalized patients. It indicates a decrease in the efficiency of available health performance.

- Bed occupancy rate: The indicator indicates the extent of use of available beds in the hospital during a certain period of time, and through it, it is possible to identify the possibility of having beds out of use during a certain period, and a high percentage indicates the efficiency of bed use, which leads to reducing treatment costs and vice versa. The World Health Organization set the index at 80%.

- Percentage of caesarean sections: The World Health Organization set the indicator at 04%. If it is high, it indicates poor health care for pregnant women in hospitals, and on the contrary, if it is low, it indicates good health performance.

- Rate of inpatient patients per doctor: This rate indicates each doctor's share of patients hospitalized during a period Temporal Specific. If the indicator rises, it indicates increasing the number of inpatients allocated to each doctor, which means a decrease in the share of each patient from the time designed for treatment and diagnosis. The World Health Organization set it at 1 doctor for every 20 inpatient patients.

#### C-Result indicators Outputs:

The results, that is, the outputs, measure what has been achieved and what has not been achieved as a result of operations and activities. There are several indicators in this field, including, for example: deaths after the operation, the rate of deaths after birth, deaths of children after birth, maternal deaths, and deaths as a result of For anesthesia, the percentage of patients who returned to the hospital after the operation, and the percentage of complaints. Among the ways to measure some indicators we find:

- Total deaths: refers to the number of deceased among hospitalized patients in relation to the total number of patients hospitalized during a specific period. The World Health Organization set the indicator at 03%. If the indicator is high, it indicates a low level of health performance.

- Post-operative mortality rate: It refers to the total deaths after the operation in relation to the total number of operations in the hospital during a specific period of time. The World Health Organization set the indicator at 10%. If the indicator is high, it indicates a low level of health performance.

- Maternal mortality rate: It refers to the total maternal mortality rate relative to the total number of mothers in the obstetrics department during a specific period of time. The World Health Organization set

the indicator at 0.25%. If the indicator is high, it indicates a low level of health performance.

- Child mortality rate at birth: It refers to the total deaths of newborns in relation to the total number of births in the obstetrics department during a specific period of time. The World Health Organization set the indicator at 02%. If the indicator is high, it indicates a low level of health performance.

- Percentage of autopsy cases: It refers to the total autopsy cases in relation to the total deaths in the hospital during a specific period of time. The World Health Organization set the indicator at 25%, so it should not be low because it is linked to research, development, and knowing the causes of deaths to avoid them in the future.

- Death rate due to pollution: It refers to the total number of deaths due to pollution in relation to the total number of hospital discharges and deaths during a specific period of time. The World Health Organization set the indicator at 10%, so it should not be high because it reflects negligence.

- Number of anesthesia deaths: It refers to the total anesthesia deaths during the year in relation to the total number of surgical operations during the same period. The World Health Organization specified the indicator as one case out of 5000 cases, so it should not be high because it indicates a low level of health performance. (Rahimi, 2017, pp. 17-24)

#### 2.4.2 . World Health Organization -WHO -standards and indicators

After reviewing the most important standards that are supposed to be adopted to measure the health performance of hospitals, we will try to review the most important reference indicators recommended by the World Health Organization, which can be relied upon

when trying to diagnose deviations, as shown in the following table:

**Table 01: Criteria for evaluating the health performance of hospitals**

| Global standard            | Standard ratios                                                                             | Indicators                            | Metric sets |
|----------------------------|---------------------------------------------------------------------------------------------|---------------------------------------|-------------|
| 01 doctor/04 families      | Number of beds/number of doctors                                                            | the doctor                            | Inputs      |
| 01 nurse/02 bed            | Number of beds/number of nurses                                                             | The Nurse                             |             |
| 01 pharmacist /100 beds    | Number of beds/number of pharmacists                                                        | A pharmacist                          |             |
| 01 specialist /100 beds    | Number of beds/number of laboratory analysis specialists                                    | Laboratory analysis specialist        |             |
| 01 staff / 01 bed          | Number of beds/number of employees                                                          | Employee                              |             |
| 05 nurses for every doctor | Number of nurses/number of doctors                                                          | Number of nurses perdoctor            |             |
| 07 days                    | Total number of days patients stayed/total number of patients stayed                        | Average length of stay                | Processes   |
| 80%                        | Total number of days of stay *100/total number of beds*360                                  | Bed occupancy rate                    |             |
| 04%                        | Total number of caesarean sections*100/total number of births                               | Percentage of caesarean sections      |             |
| 20 patients per doctor     | Total number of patients hospitalized/total number of doctors in the hospital               | Rate of inpatient patients per doctor |             |
| 03%                        | Total number of deaths among those hospitalized * 100/total number of hospitalized patients | Total deaths                          | Outputs     |
| 01%                        | Total post-operative deaths *100/total operations in the hospital                           | Mortality rate after the operation    |             |
| 0.25%                      | Total maternal deaths*100/total mothers in the obstetrics department                        | Maternal mortality rate               |             |
| 02%                        | Total number of neonatal deaths*100/total number of births                                  | Infant mortality rate at birth        |             |
| 25%                        | Total autopsy cases*100/number of deaths                                                    | Percentage of autopsy cases           |             |
| 01%                        | Total contamination cases*100/total exits and deaths                                        | Death rate due to pollution           |             |
| 1/5000                     | Total deaths due to anesthesia * 100/number of surgical operations                          | Number of deaths due to anesthesia    |             |

Source: Prepared by researchers based on: Frederic Bonvoisin, 2011, p 48-49.

### 3. A case study of indicators for evaluating health performance in the Public Hospital Institution of Metlili

#### 3.1 General introduction to Public Hospital Institution

The Public Hospital Institution is considered an institution that has a legal personality and a public nature. It provides health services to the citizen, and its management is supervised by affiliated

bodies and departments. The state funds it with all material and human resources. This stems from its direct subordination to the authority of the governor of the state, and therefore it is like other institutions. Public Institution governed by the basic principles governing public service. The Algerian legislator defines them in Article No: 01 of Executive Decree No: 07-140 of May 19, 2007, It includes the Establishment, organization and functioning of Public Hospital Institution and public neighborhood health Public Institution as “a Public Institution of an administrative nature that enjoys legal personality and financial independence and is placed under the authority of the Walli ” and “consists of a structure for diagnosis, treatment, hospitalization and medical rehabilitation, covering the population of one municipality.” Or a group of municipalities, whose tasks are to provide integrated and sequential care for the health needs of the population ».The hospital undertakes a number of tasks, as specified by law, which are:

- Ensuring the organization and programming of the distribution of curative treatment, diagnosis, medical rehabilitation and hospitalization.
- Implementing national health programmes.
- Ensuring the preservation of health and purity and combating social harm and pests.
- Ensuring improvement of the level of health service users and updating their knowledge.

From this definition, it is confirmed that the public hospital institution is a complex organization that has led to the emergence of new and advanced methods and indicators to achieve its goals. In addition to the different human composition (Administrators, professional workers, doctors, nurses, nursing assistants, laboratory workers, technical department workers) It is an organizational structure

that does not neglect the administrative side as much as it seeks to achieve the greater purpose for which it was created, which is achieving health care through organizational, social and economic goals, which It makes it a model of multi-objective structure.

Although the purpose of establishing Public Hospital Institution is to provide medical services and care to patients, they ensure that they meet the basic training needs of their employees regardless of their factional affiliations. They also devote financial resources to scientific research, which is what distinguishes them from other institutions in terms of management and organization, And goals. It seeks to achieve a set of secondary goals, such as economic stability and maintaining cost reductions without prejudice to providing the best care as possible.

### ***3.2 The material resources available at the Metlili Public Hospital Institution***

The Public Hospital Institution in Metlili theoretically includes 200 beds, while in practice it has 152 beds, in accordance with Executive Decree No: 07 140 - dated May 19, 2007, which includes the establishment of Public Hospital Institution and public neighborhood Public Institutions, their organization and functioning, and the services and units composing them within the institution. It contains 9 departments and two surgical operating rooms, in total giving 7 operating rooms. The specialties available in the institution are intensive care, medical-surgical emergencies, general surgery, pediatric surgery, orthopedic and trauma surgery, nose and throat surgery, facial and jaw surgery, blood filtration, and functional rehabilitation. The hospital also has 8 ambulances and two trucks.

### ***3.3 Criteria for evaluating performance in the Public Hospital Institution in Metlili***

After reviewing the most important standards adopted to measure the health performance of hospitals, we will attempt in this section to address how to evaluate performance in the Public Hospital Institution in Metlili by presenting the most important reference indicators used for the years 2019 to 2023, through which

health performance can be analyzed as shown in the following table:

**Table 02: Performance evaluation criteria in the Public Hospital Institution in Metlili**  
Source: Prepared by researchers based on statistics from the Metlili Public Hospital Institution, May 2024

### 3.4 Analysis of the results:

#### 3.4.1 Inputs:

practitioners, specialists, surgeons. There

| Measure<br>s | Indicators                                     | Year<br>2023 | Year<br>2022 | Year<br>2021 | Year<br>2020 | Year<br>2019 | Standar<br>d ratios |
|--------------|------------------------------------------------|--------------|--------------|--------------|--------------|--------------|---------------------|
| Inputs       | Number of beds/number of doctors               | 2.45         | 2.37         | 2.05         | 2.30         | 2.30         | <b>4 beds</b>       |
|              | Number of beds/number of nurses                | 0.42         | 0.50         | 0.51         | 0.52         | 0.57         | <b>02 beds</b>      |
|              | Number of beds/number of pharmacists           | 76           | 76           | 76           | 76           | 76           | <b>100 beds</b>     |
|              | Number of beds/laboratory analysis specialists | 30           | 30           | 30           | 30           | 30           | <b>100 beds</b>     |
|              | Number of beds/number of employees             | 0.80         | 0.80         | 0.83         | 0.81         | 0.83         | <b>01 bed</b>       |
| Operations   | Average length of stay                         | 02           | 02           | 02           | 02           | 02           | <b>07 days</b>      |
|              | Bed occupancy rate in %                        | 47           | 44           | 45           | 45           | 45           | <b>80%</b>          |
|              | Relativity of caesarean sections %             | 29           | 21           | 22           | 23           | 19           | <b>04%</b>          |
| Outputs      | Inpatient mortality rate %                     | 1.01         | 1.14         | 1.75         | 1.37         | 0.94         | <b>03%</b>          |
|              | Postoperative mortality rate %                 | 0.31         | 0.08         | 0.09         | 0.77         | 0.25         | <b>01%</b>          |
|              | Maternal mortality rate %                      | 00           | 00           | 00           | 0.05         | 00           | <b>0.25%</b>        |
|              | Child mortality rate %                         | 00           | 00           | 00           | 0.06         | 0.42         | <b>02%</b>          |

- Indicator The number of beds per doctor did not exceed 2.45 Bed For every doctor in the Public Hospital Institution, in The time at which the global average or standard using is estimated by WHO is 04 beds per doctor That is, there is a surplus of at least one doctor per bed, which gives the impression of adequate health coverage in terms of examinations and health care provided, i.e. good quantitative coverage. However, the rate of doctors per bed actually reflects Total doctors in Public Hospital Institution, There may be a disproportion in the quality and number of doctors: general

may also be a disproportion in their distribution across the various medical services, which often causes an imbalance in the health care provided, in addition to the discontent of doctors belonging to services that provide more health services than others, which in turn leads to a decline in performance compared to the number.

- The ratio of the number of beds to the number of nurses did not exceed 0.57, i.e. less than one bed for each nurse, while the global standard is estimated at two beds for each nurse, which gives the impression that there is a relative surplus

in Bed to Nurse Ration However, this does not necessarily mean sufficient coverage because there may be nurses assigned to other tasks or delegated to other services or undergoing training, and there may also be a difference in the number of nurses in different services such as the medical emergency service, which is supposed to have a greater number of nurses than other services if we know that the official statistics do not take into consideration distributing these to different specializations and interests, which necessitate proposing sub-ratio distribution, such as the type of interest, its nature, and its service.

- The number of beds per pharmacist index settled at 76 beds per pharmacist, while the global standard is estimated at 100 beds For each pharmacist, that is, there is a theoretical surplus in the number of pharmacists compared to the number of beds in the Public Hospital Establishment because there may be beds that are counted but are actually present in the emergency department, where these beds are not actually counted in the bed occupancy rate because their use is temporary and immediate. This difference is due to Even to the nature and type of family, this is in addition to increasing the number of pharmacists due to the supply of medicines specific to Public Hospital Institution and not traded in private pharmacies.
- The number of beds for laboratory analysis specialists has stabilized at 30 beds per specialist, while the global standard is estimated at 100 beds for each

laboratory analysis specialist, that is, there is a theoretical surplus in their number compared to the number of beds in the Public Hospital Institution, and this may be attributed to the fact that the latter completes the tasks of the neighborhood health institutions in laboratory analyses due to their public nature, that is, the percentage of beds is actually considered an approximate calculation only and does not indicate the real situation because the emergency department in particular requires a lot of intervention by laboratory analysis specialists.

- The number of beds per employee index stabilized at 0.80 beds per employee, while the global standard is estimated at one bed for each employee, which gives the impression that there is a surplus in the number of employees compared to the number of beds, but if we go back to the theoretical number of beds, it is estimated at 200 beds, and in this case the ratio is standard, meaning that the number of employees was compared to the theoretical number of beds, in addition to the public nature of the Public Hospital Institution, which is required to employ the largest possible number.

### 3.4.2 Operations

Average length of stay It settled at two days (02 days), And it is A rate considered good is less than Indicator The globally applicable seven 07 days. but Considering that the average length of stay is calculated by the number of days patients stay compared to the number of patients staying, it is advisable to be careful. During the stay For various interests, because it appears that the emergency department records the

shortest period of stay, which affects the overall rate, which necessitates adopting special standards for each department.

- Bed occupancy rate did not exceed 47% while that ratio Standard Globally accepted is (80%) That is to say Average length of stay low very, and this it affects the bed occupancy rate, meaning that the Public Hospital Institution has not reached the point of exploiting its potential beds during the year.

- The rate of caesarean sections reached 29%, while the global rate was 4%, i.e. seven times higher. This is a relatively high rate, but it reflects the public hospital's attempt to reduce the probability of maternal deaths after the operation. Although this is the indicator used globally, this increase in the rate may have a positive as well as a negative connotation compared to global health standards.

### **3.4.3 Outputs**

The hospital mortality rate or general mortality rate ranges between 0.94% as the minimum value and 1.75% as the maximum value, but this rate is developing at a rate that leads to the unacceptable rate, because the globally accepted annual rate is estimated at 3%, and despite this, the Public Hospital Institution still maintains a good level.

- The post-operative mortality rate reached its lowest value of 0.08%, then rose to 0.77%, which does not exceed the internationally permissible rate of 01%, in addition to the fact that no deaths were recorded due to medical errors, anesthesia or contamination. This rate indicates that the percentage of surgical operations in the Public Hospital Institution is still

good, although operations are often performed that are not serious, such as heart, lung and arterial.

- The maternal mortality rate did not exceed 0.05%, while the global indicator is 0.25%, which confirms that the Public Hospital Institution follows precautionary measures before, during and after childbirth. However, these values remain approximate because the Public Hospital Institution sets conditions for pregnant women who come to it.

- The infant mortality rate was relatively low, reaching a maximum of 0.42%, which is about a quarter of the global rate of 2%, then decreased until it reached 00, which proves the good health care for mothers and newborns in the Public Hospital Institution By studying these global indicators and applying them to the ground in Public Hospital Institution , it becomes clear to us that:

- Although the indicators are quantitative as a result of statistical processing of the results, they cannot provide a good explanation for the difference between years.

- These indicators cannot provide an accurate explanation of the health performance of the Public Hospital Institution, because they require specialization and detail, and activities differ from one department to another and from one section to another.

- The results cannot express the extent to which the Public Hospital Institution achieves its goals, but they provide approximate results that help managers monitor.

- The results of evaluating the performance of Public Hospital Institution can express the acceptable level of health

performance, but they do not provide a realistic picture of health performance, because the indicators used were calculated in a comprehensive manner and not in detail, i.e. not on the basis of interests, as the indicators that were used were measured according to the overall statistics of the institution, which affected the real picture of health performance, because the total cannot give a picture of the partial. We found many and varied differences in the results compared to the international reference standards with the Public Hospital Institution, which showed us the existence of imbalances in the internal balance of resource distribution or the existence of something that affects control over it, which confirms the study hypotheses.

## CONCLUSION

This present study has principally focused on the identification to the extent of reliance on health performance evaluation indicators in Public Hospital Institution, focusing on the global health performance measurement indicators adopted by the Algerian public hospital institutions. It became so clear that these indicators do not give results that express the real level of health performance in terms of available resources, operations and activities, and as a result of the final results of these operations and activities. It also showed that it is necessary to work on evaluating each department in an appropriate individual manner and not in a general manner to give a true picture of performance, along with reconsidering

the system of collecting, linking and classifying data and information about the inputs and operations of Public Hospital Institution and also creating new methods for recording their outputs and results. In general, the system for measuring and evaluating health performance in Algerian Public Hospital Institution must work on improving, updating and developing its methods in using indicators. The study proposes a method and approach that is consistent with its aspirations and goals and helps it highlight weaknesses:

- Developing a method for evaluating health performance that studies performance in a general manner, but does not neglect to evaluate the health performance of each department based on the standards that suit it.
- Providing an immediate and automated method for collecting data related to resources and activities in all their aspects within the public hospital institution linked to the nature of each department because the evaluation of health performance must be based on qualitative and quantitative indicators, the latter of which cannot be neglected because they provide a picture expressed in numbers that illustrates the progress of operations and their results in the public hospital institutions.

## 5. Bibliography List :

### 1. Journal article

- Alatawi, A., Niessen, L., & Khan, J. (2020). Efficiency evaluation of public hospitals in Saudi Arabia: an application of data envelopment analysis. *BMJ open*, 10(1)
- Burger, R., & Christian, C. (2020). Access to health care in post-apartheid South Africa: availability, affordability, acceptability. *Health Economics, Policy and Law*, (15)1,
- Carini, E., Gabutti, I., Frisicale, E., Di Pilla, A., & Pezzulo, A. (2020). De Wau Assessing hospital performance indicators. What dimensions? Evidence from an umbrella review. *BMC health services research*, 20(1)
- Decker, S., Alinier, G., Crawford, S., Gordon, R., Jenkins, D., & Wilson, C. (2021). Healthcare simulation standards of best practice™ The debriefing process. *Jen Clinical Simulation in Nursing*, 58(1), pp. 27-32.
- El-Gazar, H., & Zoromba, M. (2021). Nursing human resource practices and hospitals' performance excellence: the mediating role of nurses' performance. *Acta Bio Medica: Atenei Parmensis*, 92(Suppl 2)
- Fahlevi, M., Aljuaid, M., & Saniuk, S. (2022). Leadership Style and Hospital Performance: Empirical Evidence From Indonesia. *Frontiers in psychology*, 13, 911640
- Febres-Ramos, R., & Mercado-Rey, M. (2020). Patient satisfaction and quality of care of the internal medicine service of Hospital Daniel Alcides Carrión. *Revista de la Facultad de Medicina Humana*, 20(3)
- Ferreira, D., Nunes, A., & Marques, R. (2020). Operational efficiency vs clinical safety, care appropriateness, timeliness, and access to health care: The case of Portuguese public hospitals. *Journal of Productivity Analysis*, 53
- Karami, M., Fatehi , M., Torabi , M., Langarizadeh , M., & Safdari , R. (2013, Nov). Enhance hospital performance from intellectual capital to business intelligence. *Radiol Manage*, 35(6)
- Khalifa, M., & Khalid, P. (2015.). Developing strategic health care key performance indicators: a case study on a tertiary care hospital. *Procedia Computer Science*, 63
- Markazi-Moghaddam, N., Arab , M., Ravaghi, H., Rashidian , A., Khatibi , T., & Zargar Balaye Jame , S. (2016, Jul). A knowledge map for hospital performance concept: Extraction and analysis: A narrative review article. *Iran J Public Health*, 45(7)
- Mirescu, L., & Popescu, A. (2023). A STATISTICAL STUDY ON KEY PERFORMANCE INDICATORS IN HEALTH SYSTEM. *Management & Marketing Journal*, 21(1)
- Nik Hisamuddin, R., & Tuan Hairulnizam, T. K. (2022). Developing Key Performance Indicators for Emergency Department of Teaching Hospitals: A Mixed Fuzzy Delphi and Nominal Group Technique Approach,. *The Malaysian journal of medical sciences*, 29(2)
- Peng , J., Fahui, W., & Imam , M. (2020). Evaluating the effectiveness of the Hospital Referral Region (HRR) boundaries: a pilot study in Florida. *Annals of GIS*, 26(3)
- Pourmohammadi, K. H. (2018). A comprehensive map of the evidence on the performance evaluation indicators of public hospitals: a scoping study and best fit framework synthesis. *Cost Effectiveness and Resource Allocation*, 16
- Rahimi, H. K. (2017). Key performance indicators in hospital based on balanced scorecard model. *Key performance Health Management & Information Science*, 04(1)
- Steinfort, D., ALLSteinfort, D., Evison , M., Witt, A., Tsaknis, G., Kheir, F., et al. (2023). Taskforce on Quality Indicators in

EBUS Bronchoscopy. Proposed quality indicators and recommended standard reporting items in performance of EBUS bronchoscopy: An official World Association for Bronchology and Interventional Pulmonology. Expert Panel consensus statement. *Respirology*, 28(08)  
Van Looy, A., & Shafagatova, A. (2016). Business process performance measurement: a structured literature review of indicators, measures and metrics. *SpringerPlus*, 5(1)  
Višnjić, A. (2012). Measures for Improving the Quality of Health Care.

Scientific Journal of the Faculty of Medicine in Niš-Serbia, 29(02)

## **2. Seminar article**

Arora, A., & Kaur, S. (2015). Performance assessment model for management educators based on KRA/KPI. *International Conference on Technology and Business Management*. March 23-25, Indonesia