Correlation In Laboratory

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Introduction

- The correlation is a statistical technique that can show whether and how strongly pairs of variables are correlated. Correlation means association - more precisely, it is a measure of the extent to which two variables are related.

- The correlation study is one of the quality indicators laid down in the guideline of NABH, which aims to improve the quality services provided by the hospital and at the same time reduce the unnecessary financial burden of investigation on the patient.

- Correlation study determines whether and to what degree a relationship exists between two or more quantifiable variables.

There are three different types of Correlation :

a) Positive correlation.

b) Negative correlation

c) No correlation.

Diagnosis –

Diagnosis is the process of determining which disease or condition explains a person' symptoms and signs. It is most often referred to as diagnosis with the medical context being implicit. The information required for diagnosis is typically collected from a history and physical examination of the person seeking medical care.

Histopathology:

- Histopathology is the study of changes in tissues caused by disease. It prepares and examines tissue in order to provide data on the cause and progress of diseases.
- Histopathology refers to the microscopic examination of tissue in order to study the manifestations of disease.

The various equipments used in histopathology are:

- Confocal Microscopy, Confocal Laser Scanning Microscope & Spinning-Disk Confocal Microscopy Equipment.
- Cryostats.
- Freezing Microtome Stage.
- Histology Tissue Processors.
- Laboratory Microscopes, Binocular Microscope, Compound Microscope / Compound Light Microscopes.

Review Of Literature

Correlation studies between admission diagnosis and discharge diagnosis are rare. Some studies regarding methods of diagnosis have been done in relation to specific diseases or related situations, but general comparison between final and initial diagnosis irrespective of specific disease situations in a hospital is a very rare attempt.

- Few salient features of this study were that in 43.3% of the case there was an agreement in diagnosis between final diagnosis and provisional diagnosis. One such study in relation to matching of diagnosis was carried out 1 Hong Kong, to find out the accuracy of all emergency department admission diagnosis 71.4% matched the final diagnosis in the study. (B.D.E. Lgbinedion and A. Akhigbe).

- A study was also done in Lahore were 80% of the cases had provisional diagnosis. No significant association was found between the matching and unmatching of the final and provisional diagnosis with age and gender, but period of hospitalization showed significant association, reason of which may have been that complicated cases where diagnosis did not match, may have required longer period of stay. Again, there was significant association in respect to referrals, as difficult cases may have required referrals by which the diagnosis may have been provided to be different from initial one, similar reason may have been responsible for significant association in case of ≥ 2 types of investigations. Clinical examination had 55.4% sensitivity and likelihood ratio of 1.5 for matching of final diagnosis investigations had sensitivity of 44.51% and likelihood ratio of 0.71.

- An Australian study compared the sensitivity of clinical examinations to radiographs for detection of dental carries in molars and found in clinical exam (96% VS. 58%) An American study in relation to lumbar spinal stenosis showed that history taking, and physical Examination had a string likelihood ratio of 2 for detection of the problem.

Research Methodology-

- **Research Question**

- What is the extent of correlation between provisional diagnosis and laboratory histopathology diagnosis?
- Which specialties need to work efficiently and effectively to increase correlation?

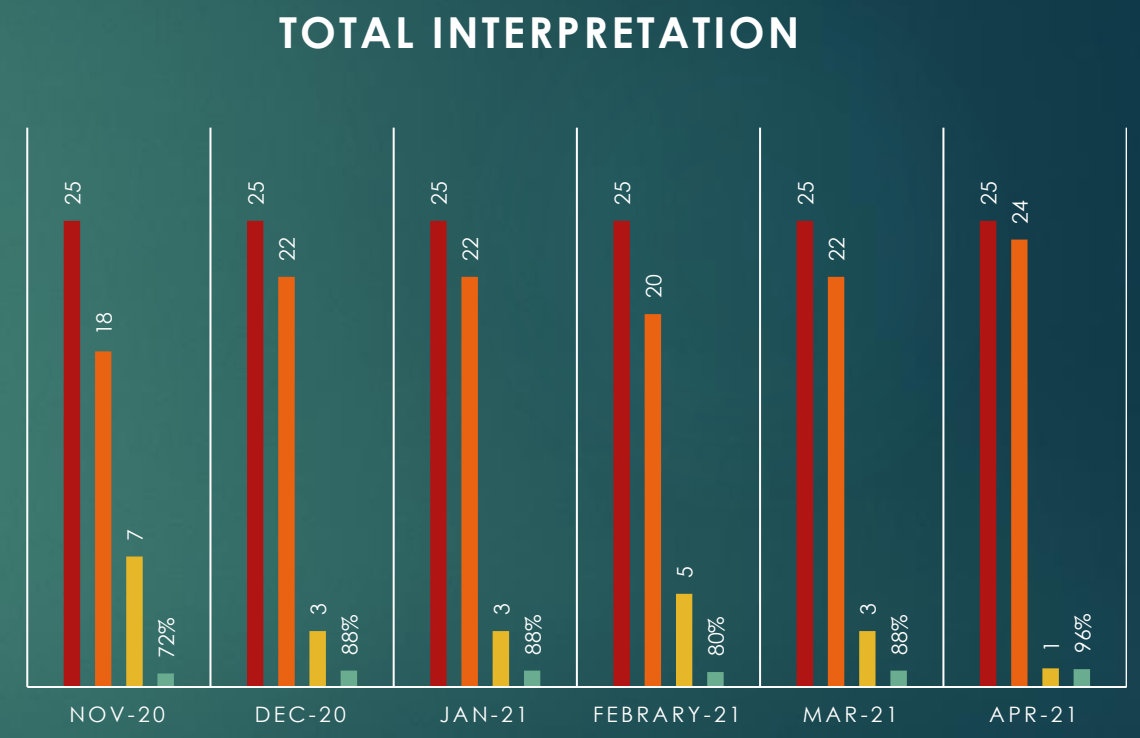
- **Research Objective**

- To study the correlation between provisional diagnosis and laboratory and histopathology diagnosis.
- To suggest recommendation for further improvement.
- To interpret and analyse the collected data from laboratory.

Area of study	**Fortis escorts hospital, Jaipur**
Design of study	• Cross sectional - Analyze data collected from a respective subset at specific point of time • Analytical – Sample of subjects are identified and information about status and outcome is collected.
Sampling unit	Patients undergo laboratory test.
Sampling method	Random convenient sampling.
Sampling size	150 samples from 6 months, 25 samples from each month.
Mode of Data collection	Data was collected by reviewing records from laboratory department. Organization history was collected from hospital site, manuals and authorities.

Analysis and Interpretation

Month	Total sample	Correlation	No correlation	Percentage of correlation
November-20	25	18	7	72%
December-20	25	22	3	88%
January-21	25	22	3	88%
Febrary-21	25	20	5	80%
March-21	25	22	3	88%
April-21	25	24	1	96%
TOTAL	150	128	22	85%



Specialty wise Analysis

S.No	Specialty	Total Cases	Correlation	No Correlation
1	General Surgery	53	47	6
2	Neuro Surgery	39	38	1
3	Urology	1	1	0
4	Gynaecology	19	17	2
5	Oncology	5	4	1
6	Gastroenterology	20	15	5
7	Plastics & Cosmetic Surgery	5	4	1
8	Internal Medicine	3	2	1
9	ENT	5	2	3
Total		150	130	20

Limitation:

- In few forms provisional diagnosis was not mentioned.
- Doctor’s name was not mentioned in few forms.
- In some cases, doctor's handwriting was not legible.

Conclusion And Recommendation:

- Doctors should write and mention the provisional diagnosis, so that accuracy for final diagnosis can be verified.

- Doctors should advice only those investigations which are mandatory for the differential diagnosis and treatment.

- Doctors should mention specific provisional diagnosis not only the investigation or test.
- There should be monthly evaluation of correlation between provisional diagnosis and histo-pathological diagnosis.
- Correlation between histo-pathological and provisional diagnosis can lead to higher patient satisfaction along with lesser burden of health resources. Efficiency, effectiveness and equality of their distribution across the population are three important measurement indicators for hospital performances.
- Reporting analysis should be done on regular basis and cross validation should be carried out for the same. So that we can identify the discrepancy between the provisional diagnosis and final diagnosis, accurate results can be obtained. Hence accuracy rate will increase.

Result :

- Analysis on correlation comprising the reports of histopathology was done for seven consecutive months from November-2020 to April-2021.
- The correlation of above six months is 85%.
- Specialty wise highest percentage of correlation is seen in General Surgery.
- This shows that the laboratory of the hospital is efficient in finding accurate diagnosis.
- This project will help in analyzing lab efficiency and keeping check on the wrong diagnosis and taking measures to improve them.

“Thank You”