EBES Newsletter
Sumandeep Vidyapeeth

ISSUE 7, DEC - 20

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EDITORIAL....

Dear all,

Coronavirus disease 2019 (COVID-19) global pandemic has changed the world considerably. As front line workers, we the healthcare providers faced many challenges in this year.

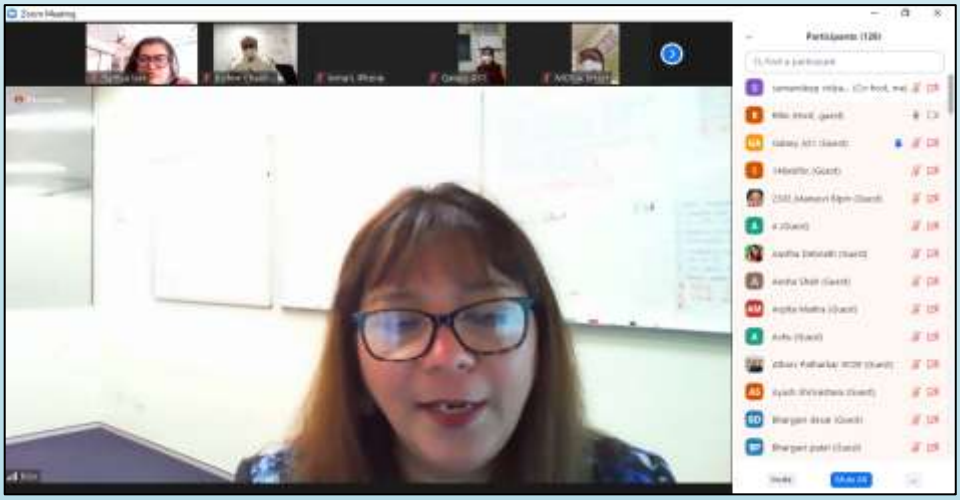
We all had added risk of contracting the disease due to proximity of interaction with the patients. As evidence supported, the universal precautions taken while dealing with patients i.e. use of surgical masks, face shields, PPE, respirators etc has helped us to protect ourselves and continue our service. The front line workers of Sumandeep Vidyapeeth (SV) have provided valuable service to patients. The standard operating procedures were developed in SV to make sure the safety of our patients, staff and students. As health care providers, we also play an important role in establishing the role of vaccines. As we get vaccinated for COVID 19, we are not only safeguarding ourselves but also will be role model for general public encouraging them to get vaccinated.

Dr. Rashmi Venkatesh
Chairperson, EBES

Major events under EBES

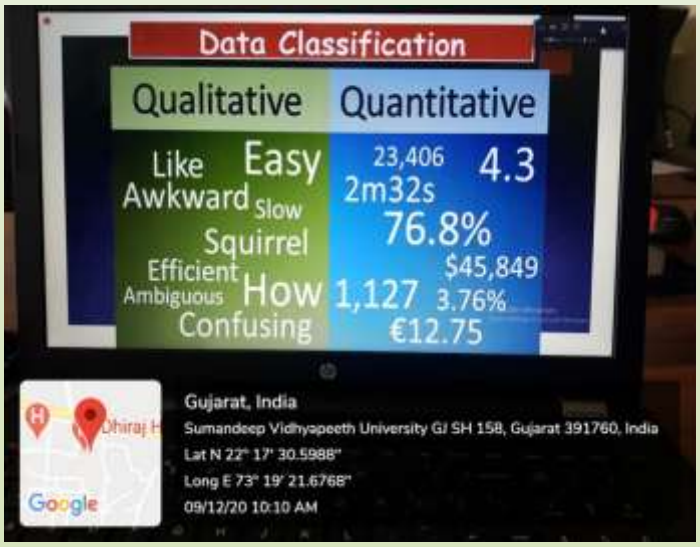
National Level webinar on "Diagnostic and clinical Evidence-Based Protocol Development" on 30/10/2020

The purpose of this National Webinar was to provide insights about preparation of diagnostic and clinical evidence-based protocols, Implementation of Evidence-based protocols on local population and Testing of diagnostic and clinical evidence-based protocols. Dr. Ritin Fernandez (Professor, University of Wollongong and St. George Hospital Director - Centre for Evidence-Based Initiatives in Health Care: a JBI Centre of Excellence)was resource person and in the scientific session she explained how to prepare diagnostic and clinical evidence-based protocols and she emphasized on the importance of each members in panel. In next part, she explained the importance of educating the residents and other health care workers regarding the prepared protocol. This helps in effective implementation of the prepared protocols. In last part, she explained about different methods for testing the protocol applicability.



Evidence-Based Education System Faculty Development Program

The two day University level faculty development program was conducted on 08/12/2020 and 09/12/2020. The newly recruited teaching faculties were oriented about Evidence-based education system by EBES core committee members.



Student capacity building Programs

EBES committee takes pride and pleasure in successfully organizing the student capacity building workshops in all constituent institutions of Sumandeep Vidyapeeth. Series of lectures and hands-on activities were conducted on each step of EBP. Peer teaching, literature searching and critical appraisal hands- on exercises was conducted to improve the skills of students in EBP.

Sr. No	Details	Dates
	Year 2020	
1	EBES PG Orientation Program	23/11/2020 – 27/11/2020
2	EBES PG Orientation Program	05/11/2020
3	EBES PG Orientation Program	21/10/2020
4	EBES PG Orientation Program	09/10/2020 – 10/10/2020
5	EBES PG Orientation Program	03/09/2020 – 05/09/2020
6	EBES PG Orientation Program	17/03/2020
7	EBES PG Orientation Program	17/01/2020

INTERPRETATION OF FOREST PLOT

Dr. Deepa J Patil, Reader, Oral Medicine & Radiology, KMSDCH, SV

With the advancements in the evidence-based medicine, systematic reviews and meta-analyses are being increasingly used to summarize available evidence, develop guidelines, aid in decision-making and direct future research. Forest plot is a graphical representation of the meta-analysis results and is also known as confidence interval plotting. Forest plots are an important graphical method in meta-analyses showing results from individual studies and pooled analyses.[1] In 1990, oncologist Richard Peto[2] developed the plot joked that the plot was named after fellow breast cancer researcher Pat Forrest, resulting in the frequent misnaming of the plot as Forest plot. However, it was named as the graph had a resemblance to an image of a forest when placed at a right angle. As the plot consists of lines and large dots, somewhere along each line, the line represents a tree and the dot corresponds to the leaf cover.

Forest plots are easy and straightforward for intake because they can provide tabular and graphical information about estimates of comparisons or associations, corresponding precision and statistical significance. This visual representation also makes it easier to see variations between individual study results. Given these advantages, forest plots are not only widely used in systematic reviews and meta-analyses, but also in other types of health research studies.[3]

Landmarks of a forest plot graph[4]

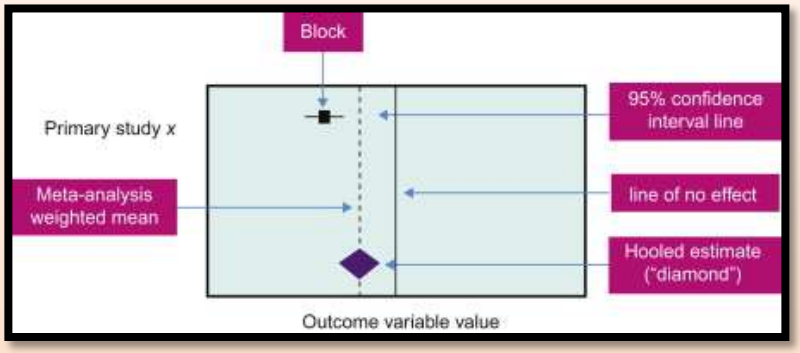


Fig 1- Main landmarks of a forest plot graph

1) **Block:** The block represents the weighted mean (point estimate) of primary study x. Its relative size and proximity to the meta-analysis pooled estimate (meta-analysis weighted mean) are proportional to primary study x relative weight. This black box gives a representation of the size of the study. The bigger the box, the more participants in the study.
2) **95% Confidence Interval (CI) line**: The 95% CI line represents the primary study *x* confidence interval. The thin horizontal lines emerging from the box indicate the magnitude of the CI. The narrower it is, the larger primary study *x* weight and proximity to meta-analysis pooled estimate are expected to be. Each end of the line represents the boundaries of the CI. In order to be significant for meta-analysis, it must not touch the "line of no effect." The longer the lines, the wider the CI, and the less reliable the data. The shorter the lines, the narrower the CI and more reliable the data.

3) **Significance line (line of null effec**t): The significance line represents outcome variable value neutrality. The vertical line is known as the "line of null effect." This line is placed at the value where (as the title suggests) there is no association between an exposure and outcome or no difference between two interventions. **Any study line which crosses the line of null effect does not illustrate a statistically significant result.** The odds ratio (OR) or relative (RR) have a null effect value of 1.
4) **Meta-analysis weighted mean**: The meta-analysis weighted mean vertically represents the weighted mean of effect sizes, obtained by meta-analysis.
   a) **Pooled estimate**: The pooled estimate represents the weighted mean of effect sizes, obtained by meta-analysis. It is represented by a **"Diamond".** The diamond at the bottom of the forest plot shows the result when all the individual studies are combined together and averaged. The horizontal points of the diamond are the limits of the 95% confidence intervals width.
   b) If the Diamond (Orange) lies on the Left of the line of no effect there are less episodes of outcome of interest in treatment group.
   c) If the Diamond (Yellow) lies on the Right of the line of no effect there are more episodes of outcome in treatment group.
   d) If the Diamond (Green) touches the line of no effect there is no statistically significant difference between the groups.
   e) If the Diamond (Blue) does not touch the line of no effect then the difference between the two groups is statistically significant.

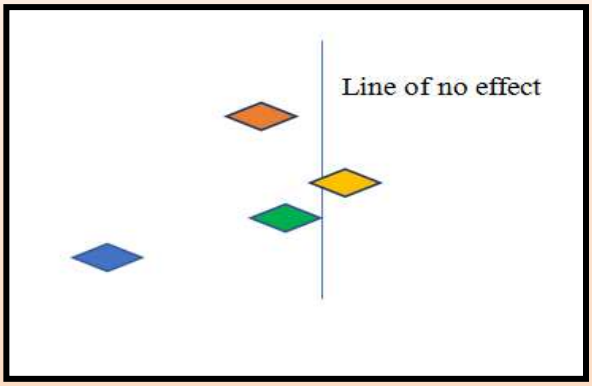


Fig 2-Diamond in meta-analysis

6) **Heterogeneity[5]:** The forest plot is able to demonstrate the degree to which data from multiple studies observing the same effect, overlap with one another. Results that fail to overlap well are termed heterogeneous and is referred to as the heterogeneity of the data—such data is less conclusive. If the results are similar between various studies, the data is said to be homogeneous, and the tendency is for these data to be more conclusive. The heterogeneity is indicated by the I2. Heterogeneity of less than 50% is termed low, and indicates a greater degree of similarity between study data than an I2 value above 50%, which indicates more dissimilarity.

Detailed Analysis of a Forest plot[6]:

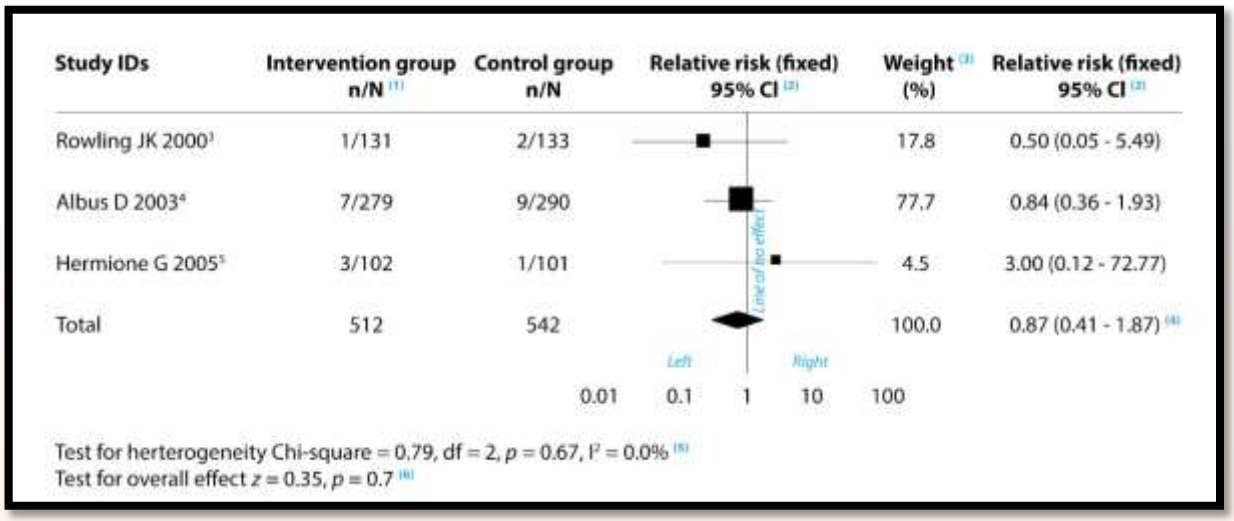


Fig 3- Example of a forest plot -N-total number in a group, n-number in a group with outcome, 2-Outcome of interest in picture and number, 3-Influence of studies o meta –analysis, 4-Over all effect, 5 - Heterogeneity I^2 6. p value indicating the level of statistical significance

Column 1: Studies IDs

The leftmost column shows the identities (IDs) of the included studies. Studies are represented by the name of the first author and the year of publication, often arranged in time order.

Column 2 and column 3: Intervention group n/N and Control group n/N

Next, to the right, we meet some data from the intervention group and the control group from each study.n indicates the number of patients having the outcome of interest, while N represents the total number of patients in that group.

Column 4: Relative risk (fixed) 95% CI

The next column visually displays the study results. The boxes show the effect estimates from the single studies, while the diamond shows the pooled result.

If the outcome of interest is adverse (e.g. mortality), the results to the left of the vertical line favour the intervention over the control. That is, if result estimates are located to the left, it means that the outcome of interest (e.g. mortality) occurred less frequently in the intervention group than in the control group (ratio <1.If the outcome of interest is desirable (e.g. remission), the results to the right of the vertical line favour the treatment over the control. That is, if result estimates are located to the right, it means that the outcome of interest (e.g. remission) occurred more frequently in the intervention group than in the control group (ratio > 1).

The last possibility: if the diamond touches the vertical line, the overall (combined) result is not statistically significant. It means that the overall outcome rate in the intervention group is much the same as in the control group. This is the case in the figure above.

Column 5: Weight (%) For the next column over, the weight (in %) indicates the influence an individual study has had on the pooled result. In general, the bigger the sample size and the narrower the confidence interval (CI), the higher the percentage weight, the larger the box, and more the influence the study has on the pooled result.

Column 6: Relative risk (fixed) 95% CI The rightmost column contains exactly the same information as is contained in the diagram in column 4, just in numerical format. So, we can observe the data both in picture and in number. This can be either the 95% CI of odds ratio (OR) or the 95% CI of relative risk (RR).The diagram above shows relative risk. When the 95% CI does not include 1, we can say the result is statistically significant.

The **p-value** indicates the level of statistical significance. If the diamond shape does not touch the line of no effect, the difference found between the two groups was statistically significant. In that case, the p-value is usually < 0.05.

The **I^2 indicates the level of heterogeneity**. It can take values from 0% to 100%. If I^2 ≤ 50%, studies are considered homogeneous, and a fixed effect model of meta-analysis can be used. If I^2 > 50%, the heterogeneity is high, and one should use a random effect model for meta-analysis. The difference between homogeneity and heterogeneity therefore lies in the different approaches taken to calculate the pooled result.

References

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2. Lewis S, Clarke M. Forest plots: trying to see the wood and the trees. BMJ. 2001 Jun 16;322(7300):1479-80.
3. Pocock SJ, Travison TG, Wruck LM. Figures in clinical trial reports: current practice & scope for improvement. Trials. 2007 Nov 19; 8:36.
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6. Training [Internet]. Cochrane.org. Available from: https://uk.cochrane.org/training-and-events

1. What is step 1 of the EBM 6 step process?
2. What is the first step in research?
3. What kind of error is bias?
4. He developed the idea of evidence based practice. Who is he?
5. Name a clinical trial in which blood is transfused from recovered COVID-19 patients to a corona virus patient who is in critical condition?