Evidence in Rehabilitation Services

UNIT 2

Introduction

Evidence based rehabilitation services makes standard services and it could establish the rights of stake holders who are looking for rehabilitation services. The peoples with disabilities are mostly vulnerable and they always feel insecure while getting any services. So while evidence based services ensure then it have ensure the ethics, norms, values, rights and overall responsibility.

Time needed to finish this unit	Approximately 3 weeks

Lessons of this unit

Lesson 1: Evidence based practice, bias, critical appraisal

Lesson 2: Critically appraise whether there is any indication of serious discrepancy between evidence supporting the use of clinical interventions and current practice.

Lesson 3: How evidence can be used to actively inform clinical practice.

Lesson-1: Evidence Based Practice (EBP), Bias, Critical Appraisal

Learning Objectives

After completion of this lesson the learners will be able to…………

- Description of Evidence Based Practice (EBP).

- Basics about Bias.

- Procedures of Critical Appraisal with examples.

	Keywords	Evidence Based Practice, Bias, Critical Appraisal

Subject-matter

2.1.1: Evidence-Based Practice (EBP)

EBP is a systematic process for finding, appraising and applying current best evidence to inform clinical practice. EBP requires a commitment to provide our patients with the best possible care.

The most common definition of Evidence-Based Practice (EBP) is from Dr. David Sackett. EBP is "the conscientious, explicit and judicious use of current best evidence in making decisions about the care of the individual patient. It means integrating individual clinical expertise with the best available external clinical evidence from systematic research" (Sackett D, 1996). EBP is the integration of clinical expertise, patient values, and the best research evidence into the decision making process for patient care. Clinical expertise refers to the clinician's cumulated experience, education and clinical skills. The patient brings to the encounter his or her own personal preferences and unique concerns, expectations, and values. The best research evidence is usually found in clinically relevant research that has been conducted using sound methodology. (Sackett D, 2002)

Fig: Evidence Based Practice

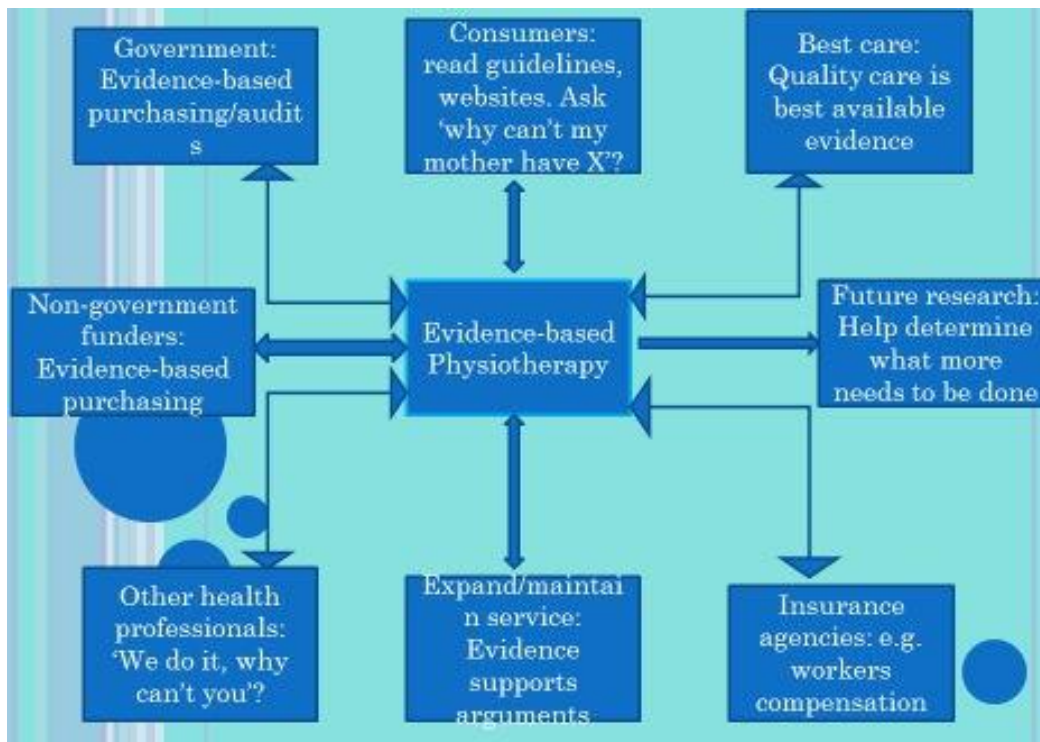**2.1.2: Why clinicians need to be evidence-based practitioners?**

Fig: Stages of Evidence Based Practice

Evidence-Based Physiotherapy

- In everyday clinical practice

  -**Questions and doubts are normal part**

The following types of questions guide us to process the evidence based practice

- What is the best way to assess this problem?
- What is the best way to treat this problem?
- What is the rational for this practice?
- Could the treatment I deliver be done better, more efficiently, or more cost-effectively?
- Can I deliver the best treatment with the resources I have (e.g. facilities, expertise)?
- What evidence support my decision?
- What are the clinical implications of delivering this treatment?
- Have I overlooked an important treatment?

2.1.3: Stages of Evidence Based Practice:

Formulating a clear question

PICO framework is useful for formulating a clear question.

- o **Identifies and defines the essential elements of a well-structured question.**
- o **A clear question address only one problem at any given time**

PICO is a mnemonic that helps one remember the key components of a well-focused question. The question needs to identify the key problem of the patient, what treatment or tests you are considering for the patient, what alternative treatment or tests are being considered (if any) and what is the desired outcome to promote or avoid.

P= Patient Problem

How would you describe a group of patients similar to yours? What are the most important characteristics of the patient? This may include the primary problem, disease, or co-existing conditions. Sometimes the gender, age or race of a patient might be relevant to the diagnosis or treatment of a disease.

I= Intervention, prognostic factor or exposure

Which main intervention, prognostic factor, or exposure are you considering? What do you want to do for the patient? Prescribe a drug? Order a test? Order surgery? Or what factor may influence the prognosis of the patient - age, co-existing problems, or previous exposure?

C= Comparison

What is the main alternative to compare with the intervention? Are you trying to decide between two drugs, a drug and no medication or placebo, or two diagnostic tests? Your clinical question may not always have a specific comparison.

O= Outcome

What can you hope to accomplish, measure, improve or affect? What are you trying to do for the patient? Relieve or eliminate the symptoms? Reduce the number of adverse events? Improve function or test scores?

Example of PICO framework

P   -   Patient population or problem of interest

                 (Patients with Stroke)

I   -   Intervention of interest

                 (Rehabilitation Therapy)

C   -   Comparison intervention

                 (Only medical intervention)

O   -   Outcomes

                 (Improved quality of life)

2.1.4: Level of Significance of Evidence

Fig: Level of Significance of Evidence.

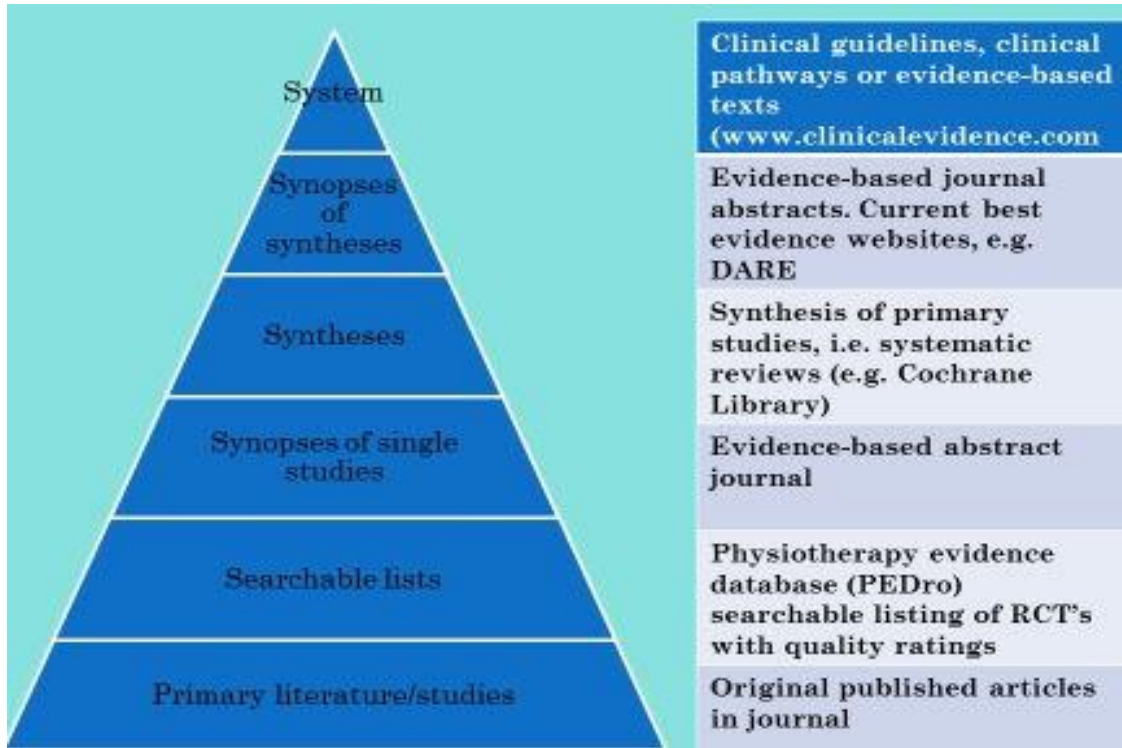## 2.1.5: Level of Organization of Evidence from Research

Fig: Level of Organization of Evidence from Research

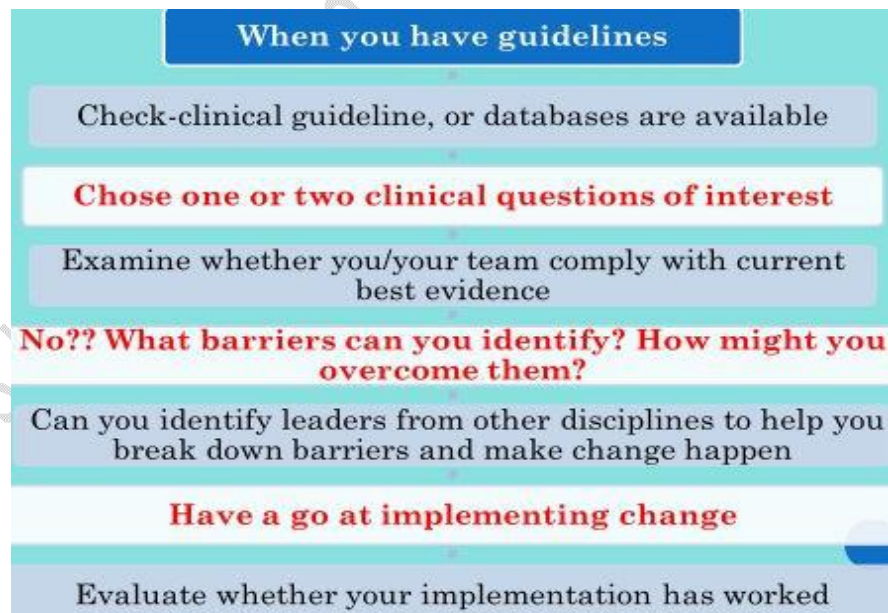## 2.1.6: Barriers to Implementing Evidence Based Practice

Barrier	Example
Structural	Financial disincentives, policies
Organizational	Inappropriate staff skills, poor facilities or lack of equipment
Peer group	Local standard of care is not in line with current practice, folklore well established
Individual	Wrong knowledge, attitudes or skills
Professional-patient interaction	Problems with in formation processing
Consumers	Wrong information

Fig: Barriers to Implementing Evidence Based Practice

2.1.7: Implementing evidence into everyday practice

When you have guidelines:

O Can being daunting, so as first step, starts small

When you have guidelines

Check-clinical guideline, or databases are available

Chose one or two clinical questions of interest

Examine whether you/your team comply with current best evidence

No?? What barriers can you identify? How might you overcome them?

Can you identify leaders from other disciplines to help you break down barriers and make change happen

Have a go at implementing change

Evaluate whether your implementation has worked

When you have no guidelines

Get a team of interested people together

Start with a burning question about best practice care in your area

Search

Use an evaluation tool to help you appraise the literature

What recommendations can you make

Present this to your peers/team

Workshop--- how implement recommendations

Check-where you successful in making change happen?

!!!!!! Remember!!!!!!

"Lack of Evidence of Effectiveness is not Evidence of Lack of Effective."

2.1.8: Bias in the study

Prejudice in favour of or against one thing, person, or group compared with another, usually in a way considered to be unfair.

Bias is an inclination or outlook to present or hold a partial perspective, often accompanied by a refusal to consider the possible merits of alternative points of view. Biased means one-sided, lacking a neutral viewpoint, or not having an open mind. Bias can come in many forms and is related to predisposition and instinct. In science and engineering, a bias is a systematic error. Statistical bias results from a discriminating sampling of a population, or from an appraisal process that does not give accurate results on average.

Cognitive biases

- **Anchoring:** Anchoring is a psychological heuristic that describes the propensity to rely on the first piece of information encountered when making decisions.
- **Apophenia:** Apophenia, also known as patternicity, or agenticity, is the human tendency to perceive meaningful patterns within random data. Apophenia is well documented as a rationalization for gambling.

35

- **Attribution bias:** An attribution bias can happen when individuals assess or attempt to discover explanations behind their own and others' behaviors. There are a wide range of sorts of attribution biases, such as the ultimate attribution error, fundamental attribution error, actor-observer bias, and self-serving bias.

- **Confirmation bias:** Confirmation bias is the tendency to search for, interpret, favour, and recall information in a way that confirms one's beliefs or hypotheses while giving disproportionately less attention to information that contradicts it. The effect is stronger for emotionally charged issues and for deeply entrenched beliefs. Confirmation biases contribute to overconfidence in personal beliefs and can maintain or strengthen beliefs in the face of contrary evidence.

- **Framing:** It is an influence over how people organize, perceive, and communicate about reality. It can be positive or negative - depending on the audience and what kind of information is being presented. For political purposes, framing often presents facts in such a way that implicates a problem that is in need of a solution. Members of political parties attempt to frame issues in a way that makes a solution favouring their own political leaning appear as the most appropriate course of action for the situation at hand. People use filters to make sense of the world, the choices they then make are influenced by their creation of a frame.

- **Halo effect:** Halo effect is when an observer's overall impression of a person, organization, brand, or product influences their feelings about that entity's character or properties. The halo effect is a specific type of confirmation bias, wherein positive sentiments in one area cause questionable or impartial characteristics to be seen positively.

- **Self-serving bias:** It is the propensity to credit accomplishment to our own capacities and endeavours, yet attribute failure to outside factors, to dismiss the legitimacy of negative criticism, concentrate on positive qualities and accomplishments yet disregard flaws and failures.

Conflicts of interest

- **Bribery:** Bribery is the giving of money, goods or other forms of recompense to in order to influence the recipient's behavior. Expectations of when a monetary transaction is appropriate can differ from place to place. Political campaign contributions in the form of cash are considered criminal acts of bribery in some countries, while in the United States they are legal provided they adhere to election law

- **Favouritism:** Favouritism, sometimes known as in-group favouritism, or in-group bias, refers to a pattern of favouring members of one's in-group over out-group members. This can be expressed in evaluation of others, in allocation of resources, and in many other ways.

- **Funding bias:** Funding bias refers to the tendency of a scientific study to support the interests of the study's financial sponsor. This phenomenon is recognized sufficiently that researchers undertake studies to examine bias in past published studies.

- **Insider trading:** Insider trading is the trading of a public company's stock or other securities by individuals with access to non-public information about the company.

- **Lobbying:** Lobbying is the attempt to influence choices made by administrators, frequently lawmakers or individuals from administrative agencies. Lobbyists may be among a legislator's constituencies, or not; they may engage in lobbying as a business, or not.

- **Match fixing:** In prearranged sports, match fixing occurs when a match is played to a completely or partially pre-determined result, violating the rules of the game and often the law. There is a variety of reasons for this, but the most common is in exchange for a payoff from gamblers. Players might also intentionally perform poorly to get an advantage in the future, or to rig a handicap system.

- **Regulatory issues:** Self-regulation is the process whereby an organization monitors its own adherence to legal, ethical, or safety standards, rather than have an outside, independent agency such as a third party entity monitor and enforce those standards. Self-regulation of any group can create a conflict of interest. If any organization, such as a corporation or government bureaucracy, is asked to eliminate unethical behaviour within their own group, it may be in their interest in the short run to eliminate the appearance of unethical behaviour, rather than the behaviour itself.

- **Shilling:** Shilling is deliberately giving spectators the feeling that one is an energetic autonomous client of a vendor for whom one is working. The effectiveness of shilling relies on crowd psychology to encourage other onlookers or audience members to purchase the goods or services. Shilling is illegal in some places, but legal in others.

Statistical biases: A statistical bias is a method of collecting a statistical sampling where a subset of the data collected is systematically excluded, where a subset of data is over-represented within the total set.

Contextual biases

- **Academic bias:** Academic bias is the bias or perceived bias of scholars allowing their beliefs to shape their research and the scientific community. Claims of bias are often linked to claims by conservatives of pervasive bias against political conservatives and religious Christians.

- **Educational bias:** Bias in education refers to real or perceived bias in the educational system. The content of school textbooks is often the issue of debate, as their target audience is young people, and the term "whitewashing" is used to refer to selective removal of critical or damaging evidence or comment. Religious bias in textbooks is observed in countries where religion plays a dominant role.

- **Experimenter bias:** In science research, experimenter bias occurs when experimenter expectancies regarding study results bias the research outcome. Examples of experimenter bias include conscious or unconscious influences on subject behaviour including creation of demand characteristics that influence subjects, and altered or selective recording of experimental results themselves.

- **Full text on net bias:** Full text on net (or FUTON) bias is a tendency of scholars to cite academic journals with open access—that is, journals that make their full text available on the internet without charge—in their own writing as compared with toll access publications.

- **Inductive bias:** Inductive bias occurs within the field of machine learning. To accomplish this, the learning algorithm is given training cases that show the expected connection. Then the learner is tested with new examples.

- **Media bias:** Media bias is the bias or perceived bias of journalists and news producers within the mass media in the selection of events, the stories that are reported, and how they are covered.

- **Publication bias:** Publication bias is a type of bias with regard to what academic research is likely to be published because of a tendency of researchers, and journal editors, to prefer some outcomes rather than others e.g. results showing a significant finding, leads to a problematic bias in the published literature. However, statistically significant results have been shown to be three times more likely to be published compared to papers with null results

- **Reporting bias & social desirability bias:** It refers to a tendency to under-report unexpected or undesirable experimental results, while being more trusting of expected or desirable results. This can propagate, as each instance reinforces the status quo, and later experimenters justify their own reporting bias by observing that previous experimenters reported different results.

2.1.9: Prejudices

- **Classism:** Classism is discrimination on the basis of social class. It includes attitudes that benefit the upper class at the expense of the lower class, or vice versa

- **Lookism:** Lookism is stereotypes, prejudice, and discrimination on the basis of physical attractiveness, or more generally to people whose appearance matches cultural preferences.

Many people make automatic judgments of others based on their physical appearance that influence how they respond to those people

- **Racism:** Racism consists of ideologies based on a desire to dominate or a belief in the inferiority of another race. It may also hold that members of different races should be treated differently

- **Sexism:** Sexism is discrimination based on a person's sex or gender. Sexism can affect any gender, but it is particularly documented as affecting women and girls. It has been linked to stereotypes and gender roles, and may include the belief that one sex or gender is intrinsically superior to another

2.1.10: Sources of bias

- poor control group /control dosage
- surrogate outcomes
- ignore drop outs
- modify trial length
- misuse baseline statistics
- statistics overload

2.1.11: What is Critical Appraisal?

- Essential component of EBP
- Methodologically examining research evidence to assess its
  - Validity
  - Importance and
  - Applicability to clinical practice.

"Critical appraisal is the process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision." *Hill & Spittlehouse, 2001*

"…the application of rules of evidence to a study to assess the validity of the data, completeness of reporting, methods and procedures, conclusions, compliance with ethical standards, etc. The rules of evidence vary with circumstances." *Last, 2001*

- Weighing up evidence to see how useful it is in decision making
- Balanced assessment of benefits and strengths of research against its flaws and weaknesses
- Assess research process and results
- Skill that needs to be practiced by all health professionals as part of their work

2.1.12: Essential step in the process of putting research evidence into practice

- Asking questions about an article's research methodology, scrutinizing its data collection and analysis methods, and evaluating how it findings are presented
- To help determine whether that article's conclusions should influence practical decision making

What critical appraisal is NOT?

- Negative dismissal of any piece of research
- Assessment of results alone
- Based entirely on statistical analysis
- Only to be undertaken by researchers/ statisticians

2.1.13: Why is Critical Appraisal Becoming More Important?

Studies which don't report their methods fully overstate the benefits of treatments by around 25% (*Khan et al. Arch Intern med, 1996; Maher et al, Lancet 1998).*

Studies funded by a pharmaceutical company were found to be 4 times as likely to give results that were favourable to the company than independent studies (*Lexchin et al, BMJ, 2003).*

- It is crucial to critically evaluate research evidence in order to facilitate Evidence-based practice.
- The term "best evidence" emphasizes the fact that it is the quality and not the quantity of evidence that is of primary significance.
- Critical appraisal allows you to distinguish the best available evidence from within a large body of research.

2.1.14: Benefits of Critical Appraisal

Using a best-evidence approach allows you to

- Retrieve reliable, up-to-date information about which interventions do and do not work for a particular public health topic
- Control the amount of literature that you will need to analyse
- Feel confident that public health decision making is based on the best of the best information avalable on a specific topic.

How do I appraise?

- Mostly **common sense.**
- You don't have to be **a statistical expert**!

- **Checklists help you focus on the most important aspects of the article.**
- Different checklists for different types of research.
- Will help you decide if research is valid and relevant.

Learner's Activity	Make different example of bias

Summary

Different types of bias may happen during study and services and its hamper the standard services. If stop and control the bias then the study and services will be highly standard as its follow the ethical issues.

Study Skills

Short Questions

- What are Level of Significance of Evidence?
- What are the Barriers to Implementing Evidence Based Practice?
- How would you Implement evidence into everyday practice
- What is bias? Sources of bias:
- What is prejudice?
- What is Critical Appraisal?
- Why is Critical Appraisal Becoming More Important?
- What are Benefits of Critical Appraisal?

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Lesson-2: Critically appraise whether there is any indication of serious discrepancy between evidence supporting the use of clinical interventions and current practice

Learning Objectives

After completion of this lesson the learner will be able to…………

- 🔳 Knowledge of Critical Appraisal description.
- 🔳 Critical Appraisal application into the research evaluation.

Keywords	Critical Appraisal, Discrepancy

Subject-matter

2.2.1: Critical Appraisal

Critical appraisal is the process of carefully and systematically assessing the outcome of scientific research (evidence) to judge its trustworthiness, value and relevance in a particular context. Critical appraisal looks at the way a study is conducted and examines factors such as internal validity, generalizability and relevance.

Some initial appraisal questions you could ask are:

- o Is the evidence from a known, reputable source?
- o Has the evidence been evaluated in any way? If so, how and by whom?
- o How up-to-date is the evidence?

Second, you could look at the study itself and ask the following general appraisal questions:

- o *How was the outcome measured?*
- o *Is that a reliable way to measure?*
- o *How large was the effect size?*
- o *What implications does the study have for your practice? Is it relevant?*
- o *Can the results be applied to your organization?*

2.2.2: How to Critically Appraise a Research Article?

- • The way in which you critique research evidence will differ slightly according to the **type of study you are appraising.**

- Once you have conducted a literature search and **obtained full text articles**, you can begin the critical appraisal process.

Is this article relevant to my issue and setting?

➢ **Read the abstract, and use the information to answer the following questions:**
  - Are your issues discussed there?
  - What are the main findings of the research?
  - Do you want to know more after reading the abstract?
  - Was the research done in a similar setting to yours?
  - Does it address a related question?
  - Are there reasons to doubt the findings without reading the whole article?

➢ **Read the Introduction and Discussion sections**
  - Look to those sections of the research article which describe in more detail the objectives and context of that study.
  - These sections will help you identify the key concepts, goals, subjects, and themes of the research.
  - Focus on the time, place and circumstances of the population and setting studied

➢ **Consult the Methods section.**
  - This will give you a step-by-step description of exactly how the study was carried out. You should take note of:
  - Where the study was done (on site, at home, administrative setting etc.)
  - From whom the data was collected (primary from staff, patients, families, or secondary from databases)

2.2.3: What are the author's conclusions?

➢ **Compare the abstract to the Discussion section.**
  - Discussion is more detailed and precise.
  - Will explain limitations of research and possible implications not mentioned in abstract.

➢ **Compare the raw data contained in tables with the results analyzed in the Discussion and Conclusion section**
  - Are the results reported in the Conclusion consistent with what is reported in the tables?
  - Is the interpretation consistent with what the actual findings were?

➢ **How well are the results related to other research on the same topic?**

- Is there a review of how these results compare or contrast with prior research?
- To determine if a study's findings are trustworthy, you will review the Methods section. There are five factors that influence the reliability of research results:
  a) Completeness of the model that is analysed
  b) Quality and relevance of the measures used and their relationship to the model
  c) Quality of the data
  d) Ability to control for differences between groups being compared
  e) Appropriateness of the statistical methods given the nature of the data generated

- **How complete is the model?**
  - A model is a description of the relationship between a dependent variable and the outcome with which it is believed to be associated.
  - A model may also specify how the dependent and independent variables are conceptually related to one another.

The following questions will help you to evaluate the completeness of a model:

- **Are all the relevant factors included in the research?**
  - How complete/relevant is the theory?
  - Are important factors or variables left out of the theory?
  - Are important theoretical factors accounted for in the analysis?
  - Does the model explain the 'facts' as you currently understand them? If not, re-examine both the 'facts' and your understanding of them.

- **How important are the variables that may have been left out?**
  - Does the study take, for example, socioeconomic or other variables into account in a reasonable way?
  - Does the study consider special contextual events, study location or patient characteristics that might influence the results?
  - Are omitted variables correlated with important policy or program variables? How would this affect the results?
- How good are the measures?
- **Validity:** Do the measures accurately reflect what the researcher was trying to measure?
- How clear and appropriate are these measures?
- Are they actual measures or proxy measures?
- Are the measures well established in either prior research or through pilot testing by the

researcher, or are they ad hoc?

➢ **How good is the data?**
- Measures (and the conclusions drawn from them) are only as good as the data used to construct them.
- Does the study adequately control for differences between the groups being compared?
- The study should minimize (i.e. control for) all other differences between the groups being compared other than the variable being measured by the study. This is what randomization tried to achieve in clinical trials.
- If this control is impossible the study should adequately control for differences by other methods (e.g. matching).

➢ **Selection of subjects.**
- How similar or different are the groups being compared?
- If the groups are different, how would you expect the differences to influence the outcome being studied?
- How have the researchers tried to control for these differences?
- Is there a risk of selection bias?
- How have the researchers addressed this?
- Are the statistical methods appropriate?

2.2.4: Key methodological points to consider in the appraisal of a randomized controlled trials.

1. Was the process of treatment allocation truly random?
2. Would participants have been able to know or guess their treatment allocation?
3. Were participants and researchers 'blinded' to participants' treatment group?
4. Were outcomes assessed objectively?
5. Were all participants who were randomly allocated a treatment accounted for in the final analysis?
6. Were all participants' data analysed in the group to which they were randomly allocated?

2.2.5: Key methodological points to consider in the appraisal of a cohort study

- Is the study prospective or retrospective?
- Is the cohort representative of a defined group or population?
- Were all important confounding factors identified?
- Were all important exposures and/or treatments, potential confounding factors and

outcomes measured accurately and objectively in all members of the cohort?

- Were there important losses to follow-up?
- Were participants followed up for a sufficient length of time?

2.2.6: Key methodological points to consider in the appraisal of a case–control study

- Were the cases clearly defined?
- Were the cases representative of a defined population?
- How the controls were selected and were they drawn from the same population as the cases?
- Were study measures identical for cases and controls?
- Were study measures objective or subjective and is recall bias likely if they were subjective?

2.2.7: Key methodological points to consider in the appraisal of a cross-sectional study

- Was the study sample clearly defined?
- Was a representative sample achieved (e.g. was the response rate sufficiently high)?
- Were all relevant exposures, potential confounding factors and outcomes measured accurately?
- Were patients with a wide range of severity of disease assessed?

Ten questions to ask

1. Is the study question relevant?
2. Does the study add anything new?
3. What type of research question is being asked?
4. Was the study design appropriate for the research question?
5. Did the study methods address the most important potential sources of bias?
6. Was the study performed according to the original protocol?
7. Does the study test a stated hypothesis?
8. Were the statistical analyses performed correctly?
9. Do the data justify the conclusions?
10. Are there any conflicts of interest?

Because humans are rarely either sound or systematic

Learner's Activity	Prepare a different critical appraisal of an article

Summary

Critical appraisal makes the judgement of the study which find out the strength and weakness of the study. It also helpful for selecting study for the purposeful use.

Study Skills

Short Questions

- What is critical appraisal?
- How to Critically Appraise a Research Article?
- What are the author's conclusions?
- Key methodological points to consider in the appraisal of a randomized controlled trials.
- Key methodological points to consider in the appraisal of a cohort study:
- Key methodological points to consider in the appraisal of a case–control study:
- Key methodological points to consider in the appraisal of a cross-sectional study

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Lesson-3: How Evidence can be used to actively inform clinical practice?

Learning Objectives

After completion of this lesson the learner will be able to

🔲 Understand the use of evidence into clinical practice.

	Keywords	Use of evidence

Subject-matter

2.3.1: The core activities at the root of evidence-based medicine

These can be identified as—

- A questioning approach to practice leading to scientific experimentation;
- Meticulous observation, enumeration, and analysis replacing anecdotal case description, for instance, EBSCO's Dynamed;
- Recording and cataloguing the evidence for systematic retrieval.

Much of the credit for today's EBP techniques belongs to Archie Cochrane, an epidemiologist, author of the book, *Effectiveness and Efficiency: Random Reflections on Health Services*. Cochrane suggested that because resources would always be limited, they should be used to provide forms of health care which had been shown in properly designed evaluations to be effective. Cochrane maintained that the most reliable evidence was that which came from randomised controlled trials (RCTs).

One of the main reasons that EBPs have been so successfully incorporated into treatment services is the vast amount of studies linking clients' improved health outcomes and the general attitude that treatments should be based in scientific evidence (Institute of Medicine, 2001; Sackett & Haynes, 1995). It is now assumed that professionals must be well-informed and up-to-date with the newest knowledge in order to best serve their clients and remain professionally relevant (Gibbs, 2003; Pace, 2008; Patterson et al., 2012).

2.3.2: Evidence-based practice Vs tradition

Evidence-based practice (EBP) involves complex and conscientious decision-making which is based not only on the available evidence but also on patient characteristics, situations, and preferences. It recognizes that care is individualized and ever changing and involves uncertainties and probabilities.

EBP develops individualized guidelines of best practices to inform the improvement of whatever professional task is at hand. Evidence-based practice is a philosophical approach that is in opposition to rules of thumb, folklore, and tradition. Examples of a reliance on "the way it was always done" can be found in almost every profession, even when those practices are contradicted by new and better information.

However, in spite of the enthusiasm for EBP over the last decade or two, some authors have redefined EBP in ways that contradict, or at least add other factors to, the original emphasis on empirical research foundations. For example, EBP may be defined as treatment choices based not only on outcome research but also on practice wisdom (the experience of the clinician) and on family values (the preferences and assumptions of a client and his or her family or subculture).

The theories of evidence based practice are becoming more commonplace in nursing care. Nurses who are "baccalaureate prepared are expected to seek out and collaborate with other types of nurses to demonstrate the positives of a practice that is based on evidence." Looking at a few types of articles to examine how this type of practice has influenced the standard of care is important but rarely internally valid. None of the articles specify what their biases are. Evidence based practice has gotten its reputation by examining the reasons why any and all procedures, treatments, and medicines are given. This is important for refining practice so the goal of assuring patient safety is met.

2.3.3: Current Evidence Based Practice in Health Science

The term evidence-based medicine is now applied to both the programs that are designing evidence-based guidelines and the programs that teach evidence-based medicine to practitioners. By 2000, "evidence-based medicine" had become an umbrella term for the emphasis on evidence in both population-level and individual-level decisions. In subsequent years, use of the term "evidence-based" had extended to other levels of the health care system. An example is "evidence-based health services", which seek to increase the competence of health service decision makers and the practice of evidence-based medicine at the organizational or institutional level. The concept has also spread outside of healthcare; for example, in his 1996 inaugural speech as President of the Royal Statistical

Society, Adrian Smith proposed that "evidence-based policy" should be established for education, prisons and policing policy and all areas of government work.

The multiple tributaries of evidence-based medicine share an emphasis on the importance of incorporating evidence from formal research in medical policies and decisions. However they differ on the extent to which they require good evidence of effectiveness before promulgating a guideline or payment policy, and they differ on the extent to which it is feasible to incorporate individual-level information in decisions. Thus, evidence-based guidelines and policies may not readily 'hybridise' with experience-based practices orientated towards ethical clinical judgement, and can lead to contradictions, contest, and unintended crises. The most effective 'knowledge leaders' (managers and clinical leaders) use a broad range of management knowledge in their decision making, rather than just formal evidence. Evidence-based guidelines may provide the basis for govern mentality in health care and consequently play a central role in the distant governance of contemporary health care systems.

2.3.4: Steps of Evidence Based Practice in Health Science

For the purposes of health management education and individual-level decision making, five steps of EBM in practice were described below

1. Translation of uncertainty to an answerable question and includes critical questioning, study design and levels of evidence;
2. Systematic retrieval of the best evidence available;
3. Critical appraisal of evidence for internal validity that can be broken down into aspects regarding
   o systematic errors as a result of selection bias, information bias and confounding;
   o quantitative aspects of diagnosis and treatment;
   o the effect size and aspects regarding its precision;
   o clinical importance of results;
   o external validity or generalizability.
4. Application of results in practice;
5. Evaluation of performance.

2.3.5: Evidence Reviews

Systematic reviews of published research studies is a major part of the evaluation of particular treatments. The Cochrane Collaboration is one of the best-known programs that conducts systematic reviews. Like other collections of systematic reviews, it requires authors to provide a detailed and repeatable plan of their literature search and evaluations of the evidence. Once all the best evidence is

assessed, treatment is categorized as (1) likely to be beneficial, (2) likely to be harmful, or (3) evidence did not support either benefit or harm.

2.3.6: Assessing the quality of evidence

Evidence quality can be assessed based on the source type as well as other factors including statistical validity, clinical relevance, currency, and peer-review acceptance. Evidence-based medicine categorizes different types of clinical evidence and rates or grades them according to the strength of their freedom from the various biases that beset medical research. For example, the strongest evidence for therapeutic interventions is provided by systematic review of randomized, triple-blind, placebo-controlled trials with allocation concealment and complete follow-up involving a homogeneous patient population and medical condition. In contrast, patient testimonials, case reports, and even expert opinion have little value as proof because of the placebo effect, the biases inherent in observation and reporting of cases, difficulties in ascertaining who is an expert and more.

Several organizations have developed grading systems for assessing the quality of evidence. These are-

- **Level I:** Evidence obtained from at least one properly designed randomized controlled trial.
- **Level II-1:** Evidence obtained from well-designed controlled trials without randomization.
- **Level II-2:** Evidence obtained from well-designed cohort or case-control analytic studies, preferably from more than one centre or research group.
- **Level II-3:** Evidence obtained from multiple time series designs with or without the intervention. Dramatic results in uncontrolled trials might also be regarded as this type of evidence.
- **Level III:** Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees.

Learner's Activity	Make a level of standard of evidence of an article

Summary
Understanding different level of evidence makes easier for selection of any evidence so it's essential to understand the level of evidence and its application.

Study Skills

Short Questions
- Describe Evidence-based practice Vs tradition
- What are the steps of Evidence Based Practice in Health Science?
- How is you assess the quality of evidence?

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