

EVIDENCE BASED PRACTICE - UNDERSTANDING AND RELATING TO EVIDENCE

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Topics to be discussed

- A summary of criteria to consider when evaluating evidence
- Examples of current evidence & gaps in research
- How do these evidence obtained in Western societies guide clinical decisions in a different context
- 評估證據時要考慮的標準
- 當前證據和研究間隙的例子
- 這些在西方社會中獲得的證據如何在不同的背景下指導臨床決策

Evaluation of quality of evidence

For each piece of evidence, evaluate:

- **Internal validity** – trustworthy and outcomes attributable to intervention.
 - Sound methodology?
 - Correct result interpretation?
 - **Large impact** – clinical significance
 - **External validity** – effectiveness & feasibility
 - Does the info apply to my client?
- 對於每個證據，評估：
 - 內部有效性 - 可靠和感干預的結果。
 - 評估方法
 - 正確的結果解釋？
 - 重大影響 - 臨床意義
 - 外部有效性 - 有效性和可行性
 - 該信息是否適用於我的客戶？

Sound methodology & results interpretation

Research subject recruitment 受試者

- Representative of the population of interest
- Subjects randomly assigned to groups are probably more representative
 - Self-assigned subjects may be different (e.g., hearing aid users vs non-users)
- Example of a good experimental design: 40 subjects of similar characteristics being randomly assigned into 2 groups:
 - Group 1 of 20 subjects use hearing aids
 - Group 2 of another 20 subjects does not use hearing aids
 - Compare outcomes
- 有代表的受試者
- 隨機分配到組可能更具代表性
- 自分配對象可能特徵上不同（例，助聽器用戶與非用戶）
- 一個好的實驗設計的例子：40名相似特徵的受試者被隨機分為2組：
 - 20名受試者的第1組使用助聽器
 - 另外20名受試者的第2組不使用助聽器
 - 比較結果

Blinding 蒙蔽

- Whether subjects or researchers are blinded to experimental conditions
- Single (only subjects are blinded) vs double blind (subjects and researchers both blinded)
- Subjects not blinded may be biased towards certain outcomes (e.g., evaluation of new technology)
- Researchers not blinded may bias subjects (e.g., make comments that could suggest better technologies, outcomes)
- 受試者或研究人員是否對實驗條件被蒙蔽
- 單盲（只有受試者是被蒙蔽的）vs 雙盲（受試者和研究者都是被蒙蔽的）
- 不被蒙蔽的受試者可能偏向某些結果（例，覺得新技術比較好）
- 不被蒙蔽的研究人員可能造成偏見（例，引導受試者覺得新技術比較好）

Whether research is experimental 適當的實驗

- Test conditions are designed to address the **theoretical framework and hypotheses**
- Variables are being controlled, manipulated and measured appropriately
- Confounds are properly controlled
- 測試建基於理論和有適當的假設
- 變數被適當地控制，操縱和測量
- 其他的變數得到適當的控制

Whether research is well planned 研究計劃

- Research planned before data collection (i.e., prospective research), control for:
 - Test conditions & materials
 - Sensitive?
 - Accurate?
 - Reflect theoretical framework and hypotheses
 - Confounds
 - Subject demographics
 - Previous and current experience
 - Cognitive ability....
- 研究計劃在數據收集（即前瞻性研究）之前，控制：
 - 測試條件和材料
 - 敏感？
 - 準確？
 - 反映理論框架和假設
 - 其他的變數
 - 受試者的特性
 - 以前和現在的經驗
 - 認知能力...。

Comparison conditions 比較情況

- **Causal effects** could not be established via
 - Single-time measures that describe a situation
 - Events measured at the same time
- Establish effects of treatment via
 - Treatment vs placebo groups
 - Pre & post comparison on same subjects
 - Longitudinal study
 - Confounds controlled, maturation accounted for
- 因果效應無法通過
 - 單次實驗了解
 - 事件同時測量
- 建立治療效果
 - 治療與安慰劑組
 - 前後比較
 - 縱向研究
 - 其他的變數得到適當的控制
 - 成長的影響

Likelihood of biases 偏見

- **Conclusions justified** by the study itself?
- **Limitations** of study critically evaluated?
- **Source: peer-reviewed ISI-rated journal** > peer-reviewed non ISI-rated but reputable journal > peer-reviewed trade journal > book > non peer-reviewed
- **Conflicts of interest/bias:** declared?
- 結論由研究證明？
- 研究限制被嚴格評估？
- 來源：同行評議的**ISI評級期刊**>同行評議的**非ISI評級但有聲望的期刊**>同行評議的**商業雜誌**>書>非同行評審
- 利益衝突/偏見聲明？

Best research最好的科研?

- Randomized control trials (RCTs)
- Research planned ahead of time
- Experimental manipulation and control of variables
- Subjects representative of population of interest
- Random assignment of subjects to groups
- Subjects and researchers blinded (double blind)
- Sensitive and accurate measurement tools and conditions
- Longitudinal
- Evaluates effectiveness
- No biased interpretation of results
- 隨機對照試驗
- 研究提前計劃
- 實驗控制變數
- 受試者有代表性
- 隨機分配受試者
- 受試者和研究者被蒙蔽 (雙盲)
- 敏感和準確的測量工具和條件
- 縱向評估
- 對結果**說明**沒有偏見的