



# A voice enabled point of care Clinical search engine & Clinical question capturing platform for evidence based medicine

*Dow International Medical College, Karachi, Pakistan*

**Izhar Hasan MD, Ph.D.**  
*Founder & CEO*

**[www.Clinicalpearl.com](http://www.Clinicalpearl.com)**

**Princeton, NJ, USA**



THE ECOSYSTEM  
OF EVIDENCE

Lessons learned in the pandemic  
era and future challenges

10<sup>th</sup> International Conference for EBHC Teachers and Developers  
10<sup>th</sup> Conference of the International Society for EBHC  
Taormina, 25<sup>th</sup> - 28<sup>th</sup> October 2023  
#EBHC2023

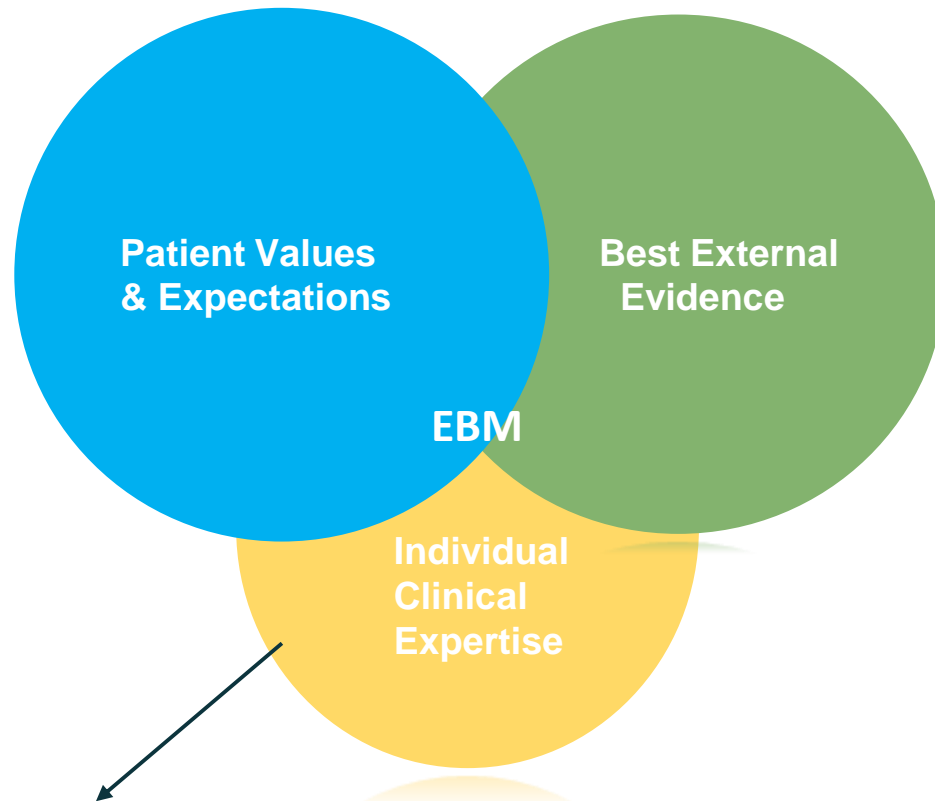


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# Evidence based vs Experience based?

## EBM Triad



## Most common point of care Clinical questions

- What is the **cause** of symptom X?
- How should I **treat** condition X (not limited to drug treatment)?
- How should I **treat** condition X (not limited to drug treatment)?
- What is the cause of physical finding X?
- What is the cause of physical finding X?
- What **test** is indicated in situation X?
- What is the **dose** of drug X?
- Can **drug** X cause (adverse) finding Y?
- What is the cause **of test finding** X?
- Could this patient have **condition X**?
- How should I **manage** condition X (not specifying diagnostic or therapeutic)?
- What is the **prognosis** of condition X?
- What are the **manifestations** of condition X?
- What conditions or **risk factors** are associated with condition Y?

Without **clinical expertise**, practice risks becoming tyrannized by evidence, for even excellent external evidence may be inapplicable to or inappropriate for an individual patient.

*Sackett DL, Rosenberg WMC, Gray JAM, Haynes RB. Evidence based medicine: what it is and what it isn't. BMJ. 1996;312:71-72*

# Clinical Pearl: Point of care Clinical Search engine

- *Voice enabled precise & concise search*
- *Clinical query capturing tool*
- *Knowledge gaps identification*
- *Personalized lifelong knowledgebase*
- *Reflective medical education- **RME***



CLINICAL<sup>®</sup>  
**PEARL**  
Reflective Medical Education.*RME*



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# Aims / Objectives

- 1. Implement, test and assess point of care, precise & concise voice enabled clinical search engine & clinical question capturing tool*
- 2. Develop a framework for an evolving **personalized decision support System (PDSS)** for clinicians*
3. Perform a **mixed methods study** to assess the useability, functionality,  
of Clinical Pearl in healthcare professionals in a Medical Uni



# Study Design & Methodology

**Design:** Mixed method study over a period of 6 months

**Sample size:** (N=98)

**Medical students:** DIMC, Karachi, Pakistan (2022)

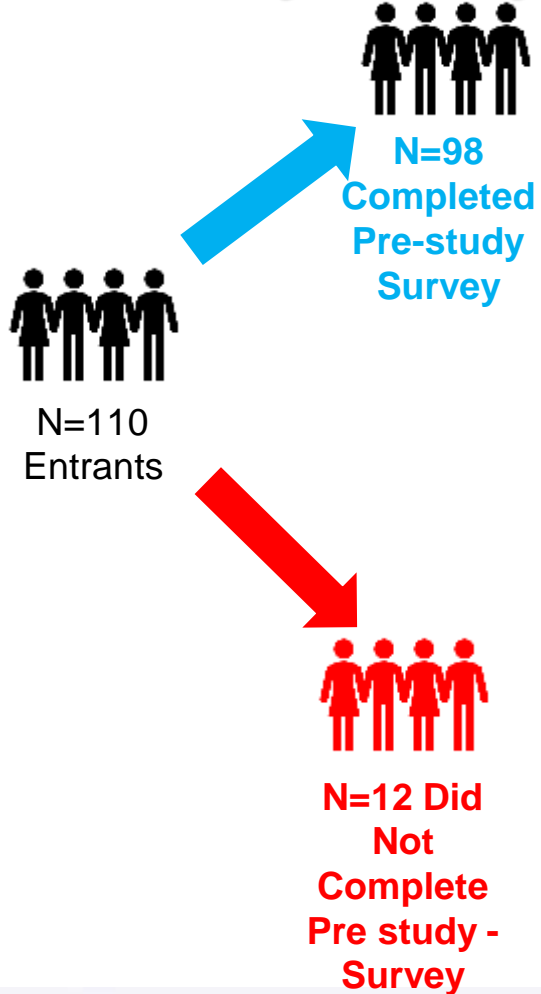
**Intervention:** Voice enabled Clinical search engine & question capturing App

**Outcome measures:**

- Useability testing of a point of care, clinical search engine and Clinical query capturing tool for Clinicians
- Pre- and Post- test feedback about useability testing of app in efficient voice enabled search & clinical questions at point of care

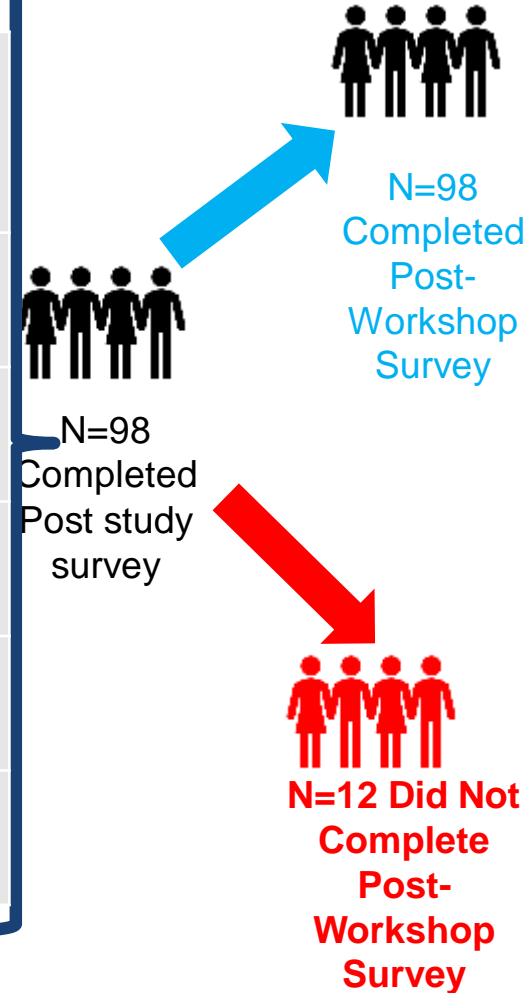
# Methods – Flow Charts

## Pre-study Survey



Pre-study EBM Skills	Responses (n)
Locating Professional Literature	98 (89%)
Searching Online Databases	98 (89%)
Identifying Knowledge Gaps	98 (89%)
Critical Appraisal of Scientific Literature	98(89%)
Identifying Patient-Relevant Clinical Questions	98 (89%)

## Post-study Survey

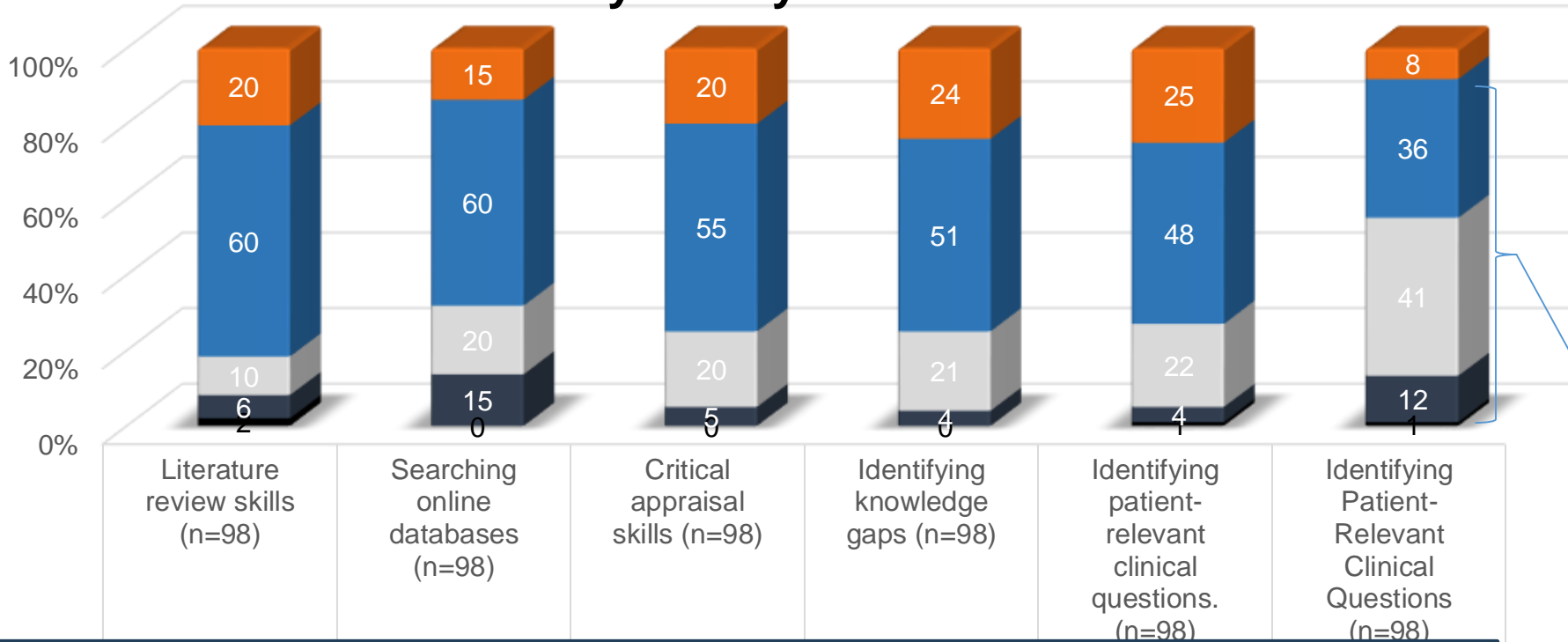


Post-study survey	Responses (n)
Locating Professional Literature	98 (89%)
Searching Online Databases	98 (89%)
Critical Appraisal Skills	98 (89%)
Identifying Knowledge Gaps	98 (89%)
Critical Appraisal of Scientific Literature	98 (89%)
Identifying Patient-Relevant Clinical Questions	98 (89%)
A Lifelong Personalized Knowledge Base	98 (89%)
A Voice-Enabled Time-Saving Instrument	98 (89%)
Time Efficiency	98 (89%)
Filling Knowledge Gaps	98 (89%)
Point of Care Query Capturing	98 (89%)
Personalized Clinical Support	98 (89%)



# Pre- Study Survey results

Pre study survey- results



Advanced	20	15	20	24	25	8
Above Average	60	60	55	51	48	36
Average	10	20	20	21	22	41
Limited	6	15	5	4	4	12
Poor	2	0	0	0	1	1

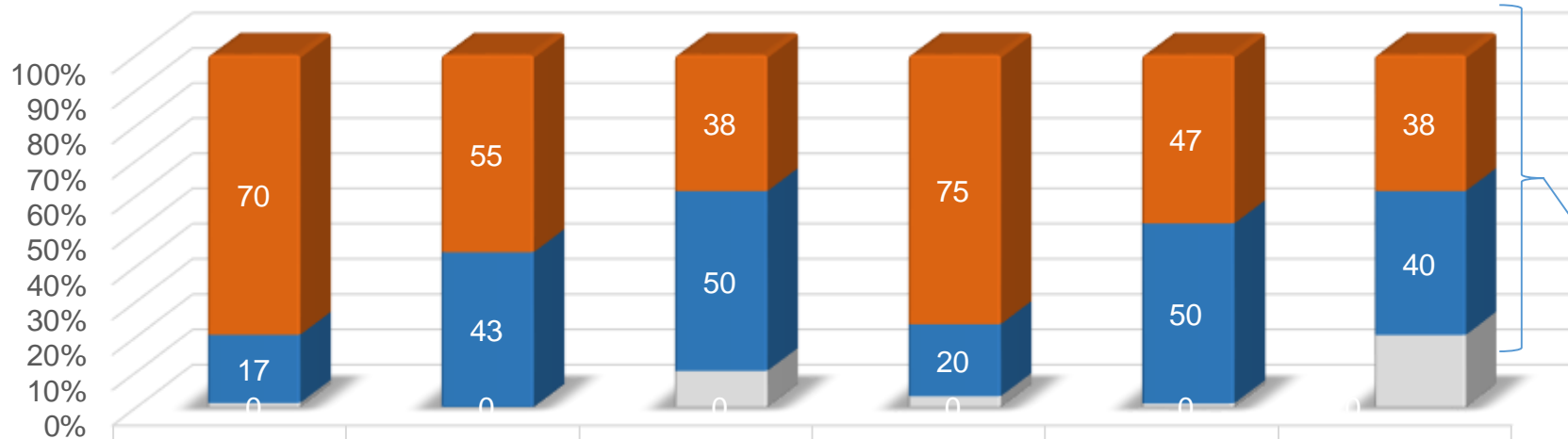
75% answered that their baseline EBM and Critical Analysis Skills were Average or Below





# Post study survey- Clinical Pearl Usability Testing

Post study survey



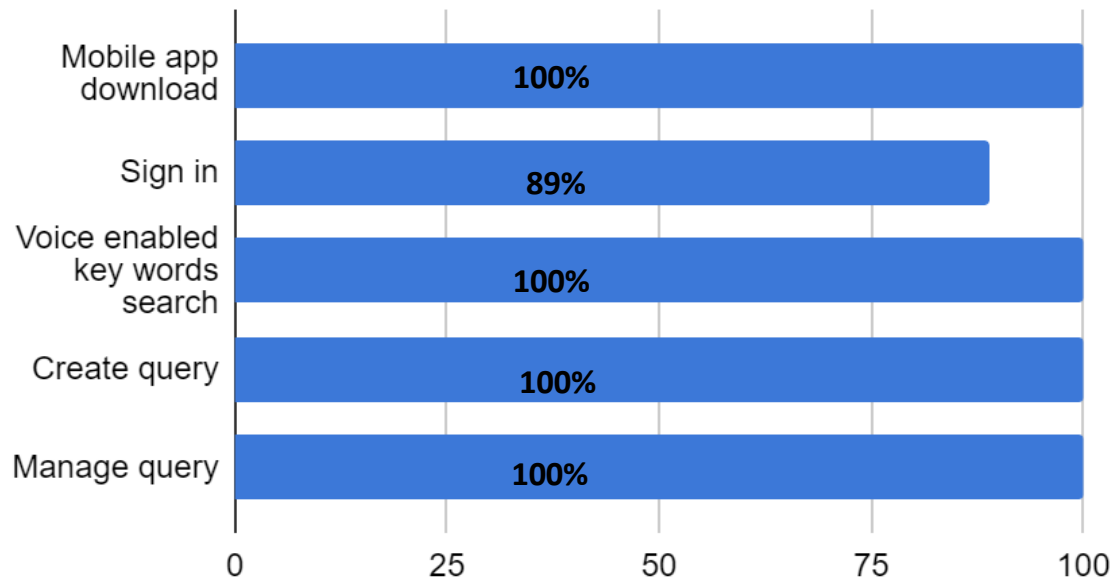
	A Lifelong Personalized Knowledge Base	A Voice-Enabled Time-Saving Instrument	Time Efficiency	Filling Knowledge Gaps	Point of Care Query Capturing	Personalized Clinical Support
Strongly Agree	70	55	38	75	47	38
Somewhat Agree	17	43	50	20	50	40
Neutral	1	0	10	3	1	20
Somewhat Disagree	0	0	0	0	0	0
Strongly Disagree	0	0	0	0	0	0

**75% agreed** to the value of Clinical Pearl platform as an effective search engine and clinical query capturing/reflective learning tool



# Post study survey- Clinical Pearl Usability Testing

Task Complete rate (%)- Quantitative (n= 98)



Qualitative feedback (%)- (n= 98)

Qualitative feedback	
Failure cause/rate	5%
Erros description	Log in, Search not found,
Top comments	It took me <b>minutes to complete my assigned tasks.</b> All the keywords and information is a search away.
	My experience with clinical profile was excellent <b>I am 100% satisfied</b>
	The application was generally useful and provided <b>concise information on certain topics</b>

Overall satisfaction rate (%)



# Clinical Pearl App

The image shows a web browser window displaying the login page for the Clinical Pearl app. The browser's address bar shows the URL <https://www.clinicalpearl.com/#/login>. The page features a navigation menu at the top with links for Home, About, Features, Download App, Contribute, Contact Us, and Research. There are also buttons for Sign Up and Login. The main content area has a light blue background with a pattern of medical icons. A central white box contains the Clinical Pearl logo, a 'Welcome!' message, and the instruction 'SIGN INTO YOUR ACCOUNT'. Below this are input fields for 'Username' and 'Password', with a red error message 'Email required' under the username field. A 'Forgot Password?' link is present, and a large blue button at the bottom says 'LOGIN TO YOUR ACCOUNT'.

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Sign Up Login

https://www.clinicalpearl.com/#/login

Login Register

**CLINICAL PEARL**

**Welcome!**  
SIGN INTO YOUR ACCOUNT

Username

Email required

Password

[Forgot Password?](#)

LOGIN TO YOUR ACCOUNT

# Limitations

- **Generalizability of study:** *Limited to medical students. Future study will include residents, and other healthcare professionals such as Hospitalists, pharmacists, nurses*
- **Short exposure** – Longitudinal study in residency programs, ambulatory settings, inpatients to assess the knowledge needs of healthcare professionals specific to their specialty
- **Mixed methods study** – case control format to compare the value of educational intervention in improving professional learning



# Conclusions

- Successful implementation of a personalized voice-based, clinical search engine and question capturing tool
- Pilot users were highly satisfied that the app may serve as a lifelong knowledge repository for self-directed learning
- Clinical Pearl app may help to organize the most important commodity of physicians own; *Clinical Experience*
- Clinical Pearl is an innovative tech forward, platform to search clinical information with built in **personalized decisions support system** for

# Further Work

- Role of clinical pearl in providing granular insights about clinician's daily clinical knowledge needs all healthcare professionals
- Impact of clinical pearl in enhancing self-directed learning activities and professional competence through EBM practice guideline predictive modelling
- Infobutton integration with EHR to poc access to Clinical Pearl to clinicians to capture point of care knowledge needs assesment

[Ultimately a living Personalized Clinical decision support system for Clinicians.](#)

*Thank you*

*Any Questions?*

***Izhar Hasan MD PhD***

*CEO & Founder*

*MD ACCESS, LLC, USA*

*[ihasanmdphd@journalclub.net](mailto:ihasanmdphd@journalclub.net)*