Evidence-based medicine and evidence-based pharmacy in medical practice.

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Abstract-
Evidence-based medicine (EBM) was born in the mid-20th century and is developing strongly in the 21st century. Evidence medicine is an approach to medical practice aimed at optimizing decision making by emphasizes the use of evidence from well-conducted studies with good design. Although all science-based drugs have a degree of empirical support, evidence-based medicine can offer stronger recommendations, classify evidence with its epistemological power, and the need for from the strongest categories (from meta-analyzes, systematic reviews, and randomized controlled trials) to weaker categories (such as from the control studies, case report) can lead to recommendations. This paper will address: types of scientific research and medical research, EBM, evidence-based pharmacy (EBP) and clinical trials (CT) phases will be reviewed for helping medical practice in developing countries.
Keywords: evidence-based medicine, evidence-based pharmacy, clinical trials.

Abbreviation: EBM: Evidence-based medicine, EBP: evidence-based pharmacy, CT: clinical trials, EBT: Evidence Based Treatment, EBCP: Evidence Based Clinical Practice.

1 INTRODUCTION

Poverty comes from hunger - housing shortages, both of which are potent killers - poor knowledge of which is poor in medical knowledge also contributes significantly. Evidence Based Medicine (EBM) aims to apply the best evidence obtained from scientifically validated clinical decision making. Evaluating the evidence-based strength of the risk factors or benefits of treatment and diagnosis is effective for the patient. The following included: types of scientific research and medical research, EBM, evidence-based pharmacy (EBP) and clinical trials (CT) phrases will be reviewed for helping medical practice.

I. Types of scientific research and medical research:

1.1. Overview of medical research

1.1.1 General concepts: Science is the knowledge of all the laws of matter and the movement of matter, the laws of nature and society. Science is a social activity aimed at exploring and discovering the laws to create principles, solutions that affect things or phenomena in order to change their state. Science is a form of social consciousness, science exists, is independent, the changes with other forms of social consciousness (Karl Marx).

1.1.2 Technology and technology: Technology is the activity to solve a technical problem (solution, means, knowledge). Techniques are knowledge, experience, systematic skills used, manufactured or manufactured.

1.1.3 Scientific research is to find the intrinsic attribute to recognize and to improve the objective world of empirical knowledge and scientific knowledge such as concepts, categories, laws, laws, axioms , theory,

1.1.3 Ethics in scientific research: The abuse of human subjects in research is not new. However, after the Nazi disgusting medical cruelties during World War II were finally exposed and evaluated in Nuremberg, it appears that nations and global organizations have recognized and launched Classical ethical guidelines for the use of human subjects in research. Helsinki Declaration was originally approved in June 1964 in Helsinki, Finland and has since undergone 7 revisions (the last in the General Assembly in October 2013) and twice clarified, a significant increase from 11 paragraphs to 37 paragraphs from 1964 to 2013 edition. The Declaration is an important document in the history of ethics research because it is the first significant effort by the medical community to self-regulate research and provide the basis for most of the next document [1].

1.2 Types of science:

1.2.1 General concept: Based on product categories from scientific research.

1.2.2 Three types of scientific research:

- Basic research: Nature, the law is pure research: Find the nature, the rules. Basic orientation research is divided into two types: basic research, foundation orientation research: observation, measurement, community health and basic orientation research: genetic.
- Application research: solutions, organization, management.
-Development research: taking samples in the laboratory –Mass Production-Invention.

Table 1. The differences between science and technology

Science	Technology
Scientific research with probability	Operating technology is deterministic
Scientific activity is always renewed not repeatable	Technological activity repeated with cycle
Products are not predetermined	Products are predetermined
Products with characteristics information	Products depend on the input
Flexible labor and highly creative	Labor as prescribed
With itself possibility purpose.	Without itself possibility purpose
Scientific invention persists with the time.	Technological invention disappears in the history of scientific progress.

2. Evidence-based medicine: [2]

2.1 Introduction:

EBM is intended to apply the best evidence obtained from scientifically validated clinical decision-making. Evaluate the evidence strength of the risk factors or the benefits of treatment and diagnosis. This is the type of applied science that can be applied to other fields such as dentistry, nursing, psychology. In evidence-based practice, we seek to clarify the main purpose of scientific research methods and to apply these methods to ensure the most accurate outcome of treatment outcomes even in the debate. Continue on the desired results. "Evidence-based medicine is the best way to integrate research evidence into clinical experience and patient status," says Dave Sackett. The following three groups are closely related: evidence-based medicine (EMB); Evidence Based Clinical Practice (EBCP) and Evidence Based Treatment (EBT). Evidence-Based Treatment (EBT) is an approach that attempts to determine the way in which experts or other decision makers identify such evidence for a reality and can assesses in a faculty way. The goal is to get rid of unhealthy habits or too risky to get better results. In case EBT is applied, it encourages professionals to use the best possible evidence, for example, the most appropriate information available. Applying evidence-based medicine is a continuous process because of the continuous updating of medical information by the number and the results of new research, especially the results from re-evaluation works. The systematic review that was previously unsuccessful due to insufficient information. In addition, the evidence-based approach to evidence-based medicine is well-suited in the hospital, as many problems arise with the patient. This is a very practical and effective way of learning in education in the hospital so called continued medical education.

2.2 The power of evidence-based medicine: [2]

In 1989, the Preventive Services Task Force (USPSTF) provided the following:

Level I: Evidence obtained from at least one well-designed randomized controlled trial.

Level II-1: Evidence obtained from a well-designed controlled trial without randomization.

Level II-2: Evidence obtained from well-designed cohort studies or control studies, preferably from multiple centers or study groups.

Level II-3: Evidence obtained from batch design over time with or without interference. Significant results in uncontrolled trials may also be considered as this type of evidence.

Level III: Comments from competent authorities, based on clinical experience, descriptive studies, or reports by expert committees.

According to the British National Institutes of Health, there are four types:

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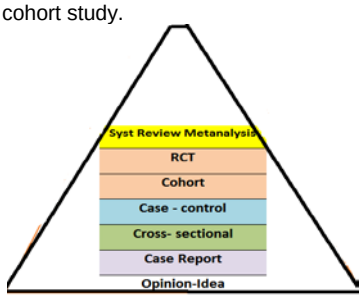
1. Level A: cohort, randomized, controlled clinical trial,
Clinical decisions based on different populations.
2. Level B: cohabitation, disease.
3. Level C: Case Studies.
4. Level D: expert opinions.
Thus, we can classify evidence into four categories:
1. Strongest: Randomized controlled trial, control, cohort.
2. Strong: Controlled clinical trial
3. Average: Clinical Trials with mass cases.
4. Weak: Expert opinion in several cases based on basic medicine.
Legend of the strongest proof from the bottom to the top:
- Bottom layer: Study on animals and lab study.
- Level 1: Weak evidence. Perspective, personal experience.
- Level 2: Average evidence, from non-experimental studies with good design. Study of case series. study of typical case.
- Level 3: Strong evidence from well-design, controlled studies.
- Level 4: Strongest evidence from cohort studies.
- Level 4a: The strongest evidence, from at least one randomized controlled trial in cohort study.
- Level 4b: Strongest evidence, from at least one systematic review in a cohort study.



3. Evidence-based pharmacy (EBP) in developing countries [3]

Poverty comes from hunger - housing shortages, both of which are potent killers - poor knowledge of which is poor in medical knowledge also contributes significantly. Evidence-based practice is the way to reduce these problems, internet is the most convenient way to address poor knowledge. The essential drug program is a big advance in the effectiveness of treating patients.

Many developing countries have policies on drugs as recommended by the World Health Organization (WHO) as Indonesian drug policy 1983 with the following objectives: Ensure the viability of people's drug needs; Improved distribution of drugs across the population; To ensure the effectiveness, safety and value of drugs for efficient use from the central to local levels; Protecting people from misuse or abuse; Develop the ability of autonomy in the country according to the economic development of the country. To achieve these things Indonesia has experienced changes: the list of essential and complementary medicines over time; Generic Public Sector generic drugs list through the Drug and Therapy Board of the hospital according to the 1989 Decree. The district hospital-health care center is based on the list of essential drugs. Most drugs are provided by 3 state-owned companies. There is a training course on the management and use of drugs according to the list of routes to employees. Quality management of central quaternary to the province must be strengthened. The hospital is guiding the use of drugs according to the route - a guide for diagnosing and treating the use of antibiotics along the route. The generic drugs must be provided and feasible for low income earners.

Content of EBP in developing countries:

3.1. Encourage prescription-based treatment-follow-up therapy-need data on clinical trials- update evidence-multiple drug combinations to be cautious. Pay attention to cost in treatment. Indonesia studied 50% of children and 75% of 5-year-olds to receive medical treatment at least one injections. Injections may be unnecessary. Injections affect the skin-muscle (muscle atrophy delta) and malnutrition. Pharmacists of pharmaceutical companies and doctors prescribing increased use of drugs can be said to be unnecessary. This is a consequence of antibiotic resistance.

3.2. Radical treatment: Many poor patients buy drugs every day when they cannot afford to buy non-compliant medicines such as tuberculosis, leprosy ... Consider using vitamin to help the poor reduce the cost of cashew treat

3.3. Concept of Essential Drug List and Category: By Alphabet 27 groups. For example, P-Paracetamol: Tablet-Order-syrup. The use of this drug has shown: Numbers needed to treat need to increase, but it is not necessarily necessary to be poor.

3.4. Public information in the community: Do not use the injection when you can take oral - no antibiotics indiscriminately - must be prescribed by a doctor. Feedback from local research to physicians, health care workers, and the public as well as the need not to use antibiotics in some diarrhea, respiratory infections.

3.5. Gift drug: WHO recommended (2005): drug-quality selection-packaging labeling-information and management.

3.6. Evidence-Based Pharmacy: Clinical Pharmacology recommends:
- Sort by group effect rather than alphabet. - About freezing enough space.
- Packed in vigilance with the mouse. - Outpatient packaging label - instructions for use in 1 week for patients who have not completed the compliance of drug conditions by the patient.
- Be careful with the medicine out of the package. - Drug handbooks are rare to find - must be in the pack. Pharmacists are not available regularly though the drugstore is open 24/24 in Mumbai-India.

4. The phases of clinical research [4] [5] [6]

Clinical trials in humans can only begin after a preclinical phase, involving in vitro and animal testing, which have shown that the reagents it is considered safe and effective. However, no animal is sufficiently similar to humans (even the genetically modified ones) to perform the test. For this reason, test drugs must also be tested on humans. Before being approved for use in a new treatment, drugs or vaccines must undergo a rigorous and systematic testing process on volunteers. This process is designed to evaluate whether a new product can be approved for general use. Each clinical trial was designed to address the issues raised in the study. It is a rigorous adherence to the pre-defined research protocol to ensure accurate and safe results. Each trial phase has different goals for developing a drug or vaccine.

Table 2. Phases of clinical trials (12-18 years)

Phase I	Determine the dose, safe side effects	20-100 patients
Phase II	Determine whether the above drug works to manage	100-300 patients
Phase III	Surveillance after marketing long term effects of the drug	1000 patients
Phase IV	New indications should be made for products licensed for circulation.	>1000 patients

Phase I: The researchers tested a drug or therapeutic solution that was being tested in a small group of 20-80 people for a first safety evaluation, determining the appropriate dose, according to Monitor the progress of the compound within the body, and begin to recognize the side effects.

Phase II: The drug or therapies under study are being tested on a larger group of 100-300 people to obtain preliminary evidence of the effect and to evaluate future safety. If evidence is available about the effect and risk is acceptable, the drug may be transferred to the next study stage.

Phase III: At this stage, the drug is tested on a larger number of patients with 1,000-3,000 people, to continue the efficacy trial and follow-up of the drug. In some cases, this result will be compared with a standard treatment if available.

Phase IV: After a drug or treatment solution has been approved by state management agencies and marketed, continue to study the safety and efficacy of the drug over a longer period of time and on the number of patients more. Further study of new indications should be made for products that have already been licensed for circulation. There are usually a thousand people involved in this IV trial.

Conclusion

1. Evidence-based medicine is the basis for the development of sustainable medical research. Apply evidence-based medicine to best benefit patients. However, the limitation of this problem is that the error in the research process.
2. Evidence-based pharmacy is a way to reduce knowledge poverty, including poor medical knowledge. With the internet is most convenient will help solve the problem of poor knowledge. The essential drug program is a big advance in the effectiveness of patient treatment.
3. Each clinical trial designed to address the issues identified in the study is well-defined in order to ensure accurate and safe outcomes, with different goals for developing a drug or a vaccine.

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