

Editorial

Clinical epidemiology for dermatologists (Dermatoepidemiology)

Arfan ul Bari

Consultant Dermatologist, Pak Field Hospital, Sierraleone.

Dermatology, once regarded as an empirical field, with treatments based on anecdotes and uncontrolled trials, and frequently associated with quackery, has now emerged as a pure scientific field based on evidence-based practices as any other field of medicine. Two recent European studies have confirmed that the majority of outpatient therapy of dermatologic conditions in routine clinical practices is based on best scientific evidence.^{1,2} However, it should be acknowledged that, still there is considerable room for improvement.³ Evidence based medicine (EBM) has been defined as “the conscientious, explicit, and judicious use of current best evidence in making clinical decisions about the care of individual patients. EBM entails formulating a clinical question, thoroughly searching the literature, critically appraising the validity and relevance of the retrieved articles, and integrating the results into the clinical practice. The main goal is to provide exemplary care for the patients using best evidence and, hence, EBM always begins and ends with the patient.”^{4,5}

Epidemiology is the study of disease

Address for correspondence

Maj. Dr. Arfan ul Bari,
Consultant Dermatologist,
Pak Field Hospital, Sierraleone.
E mail: albariul@yahoo.com

occurrence in human populations. As a science, epidemiology emphasizes descriptive and analytic observation, clinical trial, behavioral intervention, and the practical utility of diagnostic tests. "Epidemiology" is derived from the Greek 'epi' (among), 'demos' (people), and 'logos' (study/set of beliefs). Clinical epidemiology is the application of epidemiologic principles and methods to problems arising in clinical medicine, dermatology included. For dermatologists, to understand and apply this discipline is as important as to master other basic sciences, such as immunology, microbiology, and dermatopathology.⁶ Dermatoepidemiology is actually a clinical and analytic overview of evidence-based dermatology. It is emerging as an important discipline in dermatology that is pertinent to reading, interpreting, and critically examining the dermatological literature and during the past decade, it has flourished with the appearance of many new studies, books and scientific sessions on the subject.⁶⁻⁸ The International Dermatoepidemiology Association was established in 1996 to organize the efforts of all those who share an interest in the epidemiology of skin diseases⁸ and more recently, the Epidemiology Expert Resource Group of the American Academy of Dermatology has developed a dermatoepidemiology curriculum.⁹

The history of dermatoeidemiology dates back 250 years ago when James Lind examined the cause and treatment of scurvy in malnourished sailors. Joseph Goldberger's study of pellagra 90 years ago was the second classic examples of dermatoeidemiology, the application of epidemiology to the practice of dermatology.^{10,11} The recognition of Lyme disease is another classic example of "infectious" disease epidemiology. In 1972, a disease characterized by erythema chronicum migrans and "endemic arthritis" clustered in Lyme, Connecticut. An infectious agent was suspected to be the cause of the disease in 1975. The tick was thought to be the vector in 1977. In 1980, the spirochete became the prime suspect and, in 1982, *Borrelia burgdorferi* was discovered as the etiologic agent.⁶

In dermatoeidemiology, scientific methods are used to make predictions about the individual patients by various means. An understanding of basic dermatoeidemiology and biostatistics thus lends itself to making educated decisions about the accuracy and pertinence of published dermatological research findings to medical decision making. It also helps identify modifiable causal factors of disease for potential intervention. Primary prevention consists of preventing disease before it arises. Therefore, behavioral counseling functions as a form of primary prevention, e.g. by encouraging a patient with family history of skin cancer to avoid the sun.¹² Secondary prevention entails detecting a disease at an early preclinical stage when it is more amenable to treatment, e.g. performing regular skin checkups on patients at high risk for developing skin

Table 1 Search algorithm in EBD (evidence-based dermatology).

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1. Formulating a well-built clinical question
 2. Finding the current best evidence
 3. Critically appraising the evidence for validity
 4. Application of this evidence, integrating the data with patient values and clinical expertise.
 5. Storing the data and evaluating performance of steps 1-4 for continuous quality improvement
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cancer.¹³ Tertiary prevention includes measures taken to prevent complications of existing disease, e.g. taking adequate margins when surgically removing a melanoma.¹⁴

Going through all the processes to make evidence-based decisions can be time consuming, especially if you do not have adequate skills or the time to apply them. Moreover, despite your best efforts, you may not be able to find high quality evidence for many of the clinical decisions you must make. However, over the last two decades there have been numerous advances in evidence processing, including the production of streamlined guides to aid in critical appraisal of the literature, online and other forms of electronic literature searching, evidence-based abstraction services, growing numbers of high quality systematic reviews, and frequently updated textbooks in paper and electronic formats.

There are few basic concepts that must be addressed while undertaking, analyzing and interpreting any dermatological study (**Table 1**).¹⁵

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