Medical Analysis: (Critique of an article)

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**Abstract**

In the past decades, the mortality rate from cancer has transferred from minor to major component worldwide. This disease is rapidly increasing in many developing countries due to the implementation of cancer-associated lifestyle preferably decreased physical activities, westernized diets, and smoking. However, in some geographic constituencies, several distinctions in incidence rates of cancer according to specific sites present among heterogeneous populations. A higher incidence and increased mortality rate have been observed with adverse impact on quality of life. Despite many researches and developments, stomach cancer is fourth most frequent cancer in the world. However, there has been considerable heterogeneity among the development stomach and oesophageal cancers in many developed countries. Epidemiologic data and laboratory findings propose that cervical tumour characteristically initiates from a series of steps. During past 15-20 years, basic researches have concluded overwhelming evidences for the etiologic role of infection with several types of contagious diseases as the prime reason of frequent cervical cancer. The aim of this critique is to evaluate the research question, hypothesis, and study design including study methodology strengths and weakness of the review article.

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## Introduction

This assignment is based on the critique of a qualitative review study. The article that has been selected for critique is "Role and limitations of epidemiology in establishing a causal association". This article has been written by "Franco and colleagues" and the year of publication of this article is "2004".

In recent years, cancer has been considered as a foremost cause of mortality in many developed countries and second leading reason of mortality in developing countries (Jemal et al, 2011). Despite several effective methodologies, cervical cancer persistently continues as a foremost health problem for women. Recent technologies to cure and prevent cervical cancer must be accessible for females worldwide through well-organized agenda (Arbyn et al, 2011). Several risk factors are remarkably involved in the progression of these cancers. In addition, the incidences of above mentioned risk factors are distinguishable among different countries.

## Critical Analysis

### Identification of Research question, hypothesis and study design

The researchers examined roles and limitation of epidemiology as a discipline related to the identification of carcinogens in chemical, biological, and physical environment. They reviewed two illustrations of implementation of epidemiologic approaches which can possibly assist in the detection of factors causing cervical and stomach cancers, both diseases are considered as malignant worldwide. The main purpose of the review is to evaluate the determining factors involved in the progression and spread of cancer.

**Critique of Methodology and Study Design**

The methodology employed in this study was "a qualitative literature review" study. Guba (2010) defined the literature review as a well-defined scientific method introduced for the summarization and identification of evidences involved in the competence of interference enabling the generalizability and reliability of conclusions from research being evaluated. A literature review significantly intends to summarize the research studies that have been previously conducted on a particular topic. Moreover, a review of literature also allows the researchers to set grounds for combining existing information and ideas (Guba, 2010).Conversely, Aveyard (2010) suggested this method as a source of providing researcher an opportunity to interrogate the current circumstances of literature and capabilities to identify possible gaps in literature. Furthermore, the researchers also demonstrate the methodical implication of reviewed questions.

**Strengths and Weakness**

Every review possesses its own strengths and weaknesses. They may differ in specificity, sensitivity and expenses. However, more specific methods may be developed concerning the causality of research.

Strengths

This article being a literature review study provides the view of homogeneous exploration in the field of research. It also provides a platform to raise relevant concerns through broad and open-ended interrogation.

Weaknesses

In this study, no objectively verifiable results were found. Moreover, the literature review is more cost effective and time consuming due to the preexistence of available material.

## Results

Collection of research data was accomplished by Franco (2004), considering the scheme of research and objective of the literature. There is a comprehensible presentation of data consisting of major aspects of research enclosed within themes including epidemiology, etiology, and causative factors of cancer. The purpose of this literature review was to recognize the limitations and role of epidemiology of cancer linked with the recognition of carcinogens in community. They involved the studies from various researches that have been typically considered by renowned public health organizations for evaluation of carcinogenicity of supposed exposures like US National Toxicology Program (NTP), the US Environmental Protection Agency (EPA), and Health Organization's International Agency for Research on Cancer (IARC), etc. Findings suggest that in vivo studies provided relevant evidences of dose response effects of carcinogens. Unlike other diseases, cancer possesses an extended latency tenure (Sogl et al, 2012), which eventually gives rise to accomplishment of several time dependent events that convert a normal tissue into malignant cancerous lesion with potency to proceed towards invasive tumor.

These consecutive events largely depend upon numerous factors linked with the absorption of carcinogen and their progression towards target cells. The researchers concluded the limitations and role of molecular grounds of epidemiology involved in exposure assessment. The relationship between occurrence of gastric and stomach cancer and their causative microorganisms was also evaluated. Any damage in DNA structure is considered as a serious

concern in development and progression of cancerous cells. Similarly, delay in repair of such DNA before replication may lead to amplifications, translocations and mutations. The adapting effects of polymorphisms in metabolism of carcinogen along with DNA repair genes adversely influence DNA damage such as antioxidants consumptions. The authors concluded clear results indicating that there is a proportional relation between prevalence of infection by H. pylori and rate of gastric cancer across different countries.

**Limitations**

The main limitation of this review was that there was only one example for biomarkers that provided significant information about divisions of chemical carcinogens. Another limitation was characterized by unsophisticated scenarios of gene environment relations that are considered to appoint in literature of molecular epidemiology.

**Discussion**

After concluding the review of past evidences, it was concluded that main advantages of biomarkers is their distinguishable characteristics, since the abnormalities were frequently responsible to develop cancer. Moreover, the implementation of biomarkers as intermediary endpoints as alternative biomarkers may be recognized prior to the development and progress of cancerous tissues. Results obtained from evaluations of biomarkers can be used in examination of human carcinogenicity. The predicament of previous levels of relevant adducts was being more critical since, the DNA adduct detection methods become sensitive. Several sample banks are well established in developed countries that can remarkably expand many case control researches regarding cancer. No biased results were found in the literature. However, long term researches may proof to be challenging in rapid recognition of human carcinogens. Although, it was significant to consider the confounding and misclassification in review possible for

restrictions of epidemiologic evaluations and opinion regarding their significance should be based on their frequency.

## Conclusions

Cervical cancer was found to be second most frequent neoplasm in women throughout the world. It corresponds to nearly 10% of total cancer presentations occurring in women. A synergistic effect was found between genetics of host and bacterial polymorphisms resulting in high virulence of infecting genotype in more susceptible individuals that are prone to develop cancer because of the nature of their cytokines which are coupled with relatively high risks. Different chemotherapeutic trials have been conducted and accomplished to evaluate the risk factors involved in cancer progression and invasion. For example, a research trial was conducted in Colombia where the population was at high risk. The researchers concluded that well timed curing of cancer infection consequently, increased the possibility of regression of cancerous lesions.

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