EDITORIAL

Epidemiology — Role of health professionals in prevention of disease

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Epidemiology according to the Greek origin of its terms 'epi', 'demos' and 'logos' in its literal interpretation refers to the 'study upon people'.[1] The World Health Organization (WHO) defines epidemiology as "the study of the distribution and determinants of health-related states or events and the application of this study to the control of diseases and other health problems".[2] It is a topic that is present in almost all textbooks related to the medical curriculum, but is usually overlooked by most of the medical students in Pakistan during their studies of different subjects. One reason for this is that the professional examinations for these subjects (except for Community Health Sciences) do not focus on Evidence Based Medicine, which is closely linked to epidemiology and is indispensable in the effective diagnosis and management of most clinical presentations.[3]

The concept of epidemiology can be better realized if one understands that disease is 'not normally distributed' i.e. for any disease in a given population, everyone does not have an equal chance of acquiring the disease.[1] This may be applied to any communicable disease such as tuberculosis, malaria, HIV, but is equally applicable for non-communicable diseases such as heart disease, diabetes, and cancer, as well as road traffic accidents. Even for a common disease like influenza, if an infected person sneezes in a crowded place like a classroom, then everyone in the room is not equally likely to develop the disease, even though all of them are exposed to the infective organism. There are many associated factors which predispose or prevent a person from acquiring a given disease.[4] A main objective of epidemiology is to identify the risk factors associated with a specific disease and to test interventions for avoiding these risk factors.

The identification of risk factors is useful for the prevention of disease as well as the complications of the disease including mortality. There are three levels of prevention in epidemiology, which are primary (prevention of disease), secondary (early detection), and tertiary (prevention of complications).[4] Primary prevention is applicable before the disease process starts and usually involves specific protection e.g. vaccination or wearing helmets and seat belts. It also includes general guidelines for a healthier lifestyle such as healthy diet, regular exercise, smoking cessation, etc. Secondary prevention applies to the detection of the disease before its clinical manifestations are apparent; this can be done through routine practices such as blood pressure and blood sugar monitoring, pap smear, blood screening, etc. Tertiary prevention is applicable when the disease signs or symptoms become clinically apparent; it is useful for treatment or control of the disease to prevent further spread, complications, or death. Most physicians and specialists tend to focus mainly on tertiary prevention, since the patients who come to their clinics are already diseased. The responsibility for secondary prevention is generally delegated to the family physicians, while the role of primary prevention is left for the public health professionals.[5]

In order to ensure effective prevention strategies the physicians and specialists need to play a more effective role in the primary and secondary prevention of disease as well.[5] The argument against this is that the patients who present to the specialists are already diseased, so there is no need for primary or secondary prevention. An important point to consider is that in our culture a patient seldom comes alone to a specialists' clinic, especially when the disease is in an advanced stage. A male patient coming for an angioplasty or cardiac bypass surgery will usually be accompanied by his brother or son, while a female with breast cancer will be with her sister or daughter. In both cases the sibling or the son / daughter are also at a higher risk of developing the same disease later on in their life. The consultants can play an effective role in the prevention of disease if they considers the responsibility to the 'at risk relatives' of the patient as well.[6]

If a public health specialist was to give a lecture on stopping smoking to a group of university students or to the male employees of an organization, then the positive impact of motivating a smoker to stop smoking may be there in less than 10 out of 100 smokers. Similarly if a family physician was to advise all females above 30 years of age for self-breast examination, then a similar small

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proportion of less than 10% would follow-up on the advice. But if the same preventive advice was given by a cardiologist / cardiac surgeon or gynecologist to the respective relatives of the cardiac or breast cancer patient - then there would be a higher chance of acceptance. The role of the public health specialist and the family physicians is also important in the primary and secondary prevention of disease, since they are able to communicate with a much larger segment of the population.[7] But the contribution of the specialists would strongly augment the efforts for the prevention of disease in a more effective manner. A few words of advice to the patients' relatives by a specialist would be more effective than any costly treatment. Other alternate strategies could include referring the relatives to a family physician, or having information leaflets or self-assessment forms available in the waiting area.[8]

The challenging task of preventing disease and raising awareness among the general population needs to be taken up by the health professionals at all levels of the health care system.[6] It is also important to highlight the importance of primary and secondary prevention in the medical curriculum. This will prepare our future doctors to advocate for the health prevention strategies in a more effective manner.[5] The consultants and specialists in teaching hospitals should emphasise the importance of communicating prevention strategies to the patients as well as their relatives.[6] The medical journals can also contribute effectively to this by regular publication of editorials or review articles on these topics. The promotion of prevention strategies will lead to healthier lifestyles and decrease the burden of health expenditure in the country.

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