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PUBLIC HEALTH AND CHRONIC DISEASE

Introduction

In this composition, we would outline a strategic approach to address one of the chief chronic diseases i.e. chronic obstructive pulmonary diseases COPD, their major causes and possible ways of their prevention and management. Further, we would build a public health framework to reduce the burden of the disease and the limitations faced by those public health approaches; accompanied by few current standards, policies and programs applied for COPD management employed across Australia.

Burden of the COPD

In Australia, COPD constitute the sixth largest cause of mortality among males and seventh largest among females. According to a survey (AccessEconomics 2008), COPD caused total 16,004 deaths in Australia i.e. one death per 30 minutes. Out of the total death count, tobacco smoking was accused for 16,290 years of lost life (DALYs) in the West Australian population. According to the Australian Institute of Health and Welfare, the death rate is almost double in men as compared to women i.e. 31 vs. 16 deaths per 100,000 (AIHW 2010).

COPD implies a great burden on the Australian population in terms of health-care cost. The direct cost burden of the disease that falls upon the Australian health care system is approximately \$900 million with hospital admissions constituting the largest share of health spending i.e. \$473 million (AccessEconomics 2008, pp. 45-47). An amount of \$8.8 billion was lost because of the loss of productivity due to COPD in terms of lower employment, absenteeism and the workplace impact of premature death of Australians with COPD. The highest share of these entire cost burdens estimates up to \$90 billion which is solely bared by the individuals who are directly affected by the loss of wellbeing. The loss isn't only concerned with money but most importantly with the loss of life. In 2008, 157,149 years of life were lost due to premature deaths caused by COPD; whereas, 192,953 DALYs of wellbeing were lost due to disabilities arising out of COPD.

The population that is primarily affected by COPD includes smokers (chiefly men more than women); people belonging to age group 55-84 years; young groups with the prevalent habit of smoking; and people working in environment polluted with poisonous gases, dust and other harmful gases. The highest mortality rate due to COPD lies in middle age to old age reflecting the higher incidence of the disease in this cohort. The Australian Lung Foundation estimates that roughly 1.2 million Australians have some form of COPD which represents approximately one in seven Australians over 40 years of age.

The way out from this menace is implementation a proper public health approach nationwide, having its focus on eradicating the basic cause of COPD; I.e.the fewer the number of tobacco

smokers, the lesser would be the chances of people getting in contact with the cruel disease. Further in the composition, we will present a comprehensive plan to fight back the disease on national level.

Chronic Obstructive Pulmonary Disease (COPD) – Causes and Associated Symptoms

COPD basically refers to a set of pulmonary diseases that includes emphysema and chronic bronchitis. It limits the course of air inside the lungs and makes breathing difficult.

Tobacco smoking stands first in the list of its major causes. According to a survey (AIHW 2005); among smokers, almost 90% of the COPD cases were caused due to direct tobacco smoke, whereas, 8% of the children asthma cases were caused due to indirect smoke. Thus, side stream (burning end of the cigarette) tobacco smoke and environmental (exhaled by smoker) tobacco stream also affect the respiratory conditions of an individual as much as the mainstream.

Other causes include occupational dust and fumes, air pollution, genetic disorders, pre-mature births resulting in incomplete lung development and respiratory infections(Mannino 2007, p. 69). Associated health conditions which make COPD a systematic disease include; persistent cough, unintentional weight loss, skeletal muscle dysfunction; an amplified threat of cardiovascular disease, osteoporosis, and depression (Soriano 2008, pp. 133-134). Therefore, it may be deduced that COPD is a lung-related disease mainly caused by tobacco; resulting in breakdown of lung tissues and dysfunction of small airways accompanied by consequential poor passage of air into and out of the lungs. This disease is self-inflicted, hardly reversible; it worsens over time, declining the health related quality of life.

Common symptoms of include cough, wheezing, mucus and shortness of breath. Breathlessness resulting in declined quality of life, cardiovascular diseases and depression are the co-morbidities associated with COPD. Diagnosis of COPD on the basis of these symptoms is moreover difficult as all of these are commonly attributed to aging and normal smoker's symptoms (Dutta 2013, pp. 223-225).The most adequate way of its diagnosis is through 'Spirometry' (Vollmer 2009, p. 588).

Public Health Approach for the Prevention and Control of COPD

Now, we are going to formulate a comprehensive public health approach that aims to achieve maximum prevention and control over the disease for the population. Public health and human rights together imply few responsibilities on the government, non-government organizations, health care sector and people themselves. These responsibilities incorporate reducing infant mortality; improving environmental and industrial health; preventing, treating, and controlling epidemic, endemic, occupational, and other diseases; and ensuring the availability of medical care in the event of sickness (Gruskin 2006).The approach illustrated below would mainly include four major goals incorporating various strategies and actions that could help achieve those pre-defined goals.

Goal 1: Surveillance and Evaluation

At first there is an immense need for the collection of COPD related public health data. And for the already collected data there lie the necessity for its analysis, interpretation and its broadcast to the general public. The basic objective behind the data manipulation is to assess the society's progress towards healthy breathing. World Health Organization(Kaltaev (ed.) 2007, pp. 63-70) has provided a guideline for step by step approach towards successful surveillance of respiratory diseases;

Step 1: Collection of questionnaire-based information – this refers to gathering of personal information from people regarding their extent of tobacco usage, pollution exposure, and respiratory symptoms. International Study of Asthma and Allergy in Childhood (ISAAC), European Community Respiratory Health Survey (ECRHS) and the Burden of Chronic Obstructive Lung Disease (BOLD) are few standardize questionnaires that are greatly helpful in extracting the useful information from public. This valuable information can be used to assist the surveillance systems operating on the national level.

Step 2: Use of graded physical examination processes in the primary health-care centers – here the attention is being drawn towards spirometry. Spirometry is a successful way of identifying a largenumber of patients with mild to moderate airflow obstructions that indicated presence of COPD upon screening (Lin 2008, pp. 542-543).Spirometry accompanied by different medical therapies has also proved to be helpful in smoking cessation in patients with COPD (Lin 2008, p. 539). This process has no significant adverse effects; therefore, it can be easily employed for surveillance purpose.

Step 3: Expand testing to full lung test, oxymetry and allergy test – these tests are an expensive method and include different laboratory-based medical tests like; methacholine challenge, IgE testing, blood gas measurement, reversibility test and alpha-1-antitrypsin. When it comes to economic aspects of the treatment process, several ethical issues arise during the procedure; especially at the end stage. The chief ethical concerns focus on the institution and withdrawal of mechanical ventilation in COPD patients in the hospitals. This ethical dilemma depends upon COPD survival statistics, quality of life, community healthcare resources and economic aspects of care.

No sufficient data is available regarding the prevalence of COPD as the disease is widely considered to be under-diagnosed. Another major problem in data collection is the differentiation of COPD from asthma. Genetic and Rare Diseases Information Center (GARD) has developed a simple questionnaire that is essential in highlighting the major distinction between the two (Kaltaev (ed.) 2007, p. 80). Thus the workforce needs to be trained for the intelligent use of the information for early diagnosis of the disease and identifying the extent of its severity.

Surveillance and Australian Workplace Based Respiratory Events (SABRE), National Injury SurveillanceUnit, National Centre for Immunization Research and Surveillance (NCIRS) and

National Notifiable Diseases Surveillance System (NNDSS) are few surveillance teams currently functioning in Australia. These surveillance teams rely on self-reporting by patients, administrative databases, or lung function testing in large, population-based samples. On the other hand, General Practitioners (GPs) and practice nurses are health service providers at a very basic level. They may play a key role in collection, maintenance and provision of public health-related data to the surveillance teams working in the country (Nola Cecins 2012, pp. 15-16).

Goal 2: Public Health Research and Prevention Strategies

Our second goal calls for detailed scrutiny of the collected data so as to uncover the underlying causes of COPD, their prevention and treatment. Although COPD is not absolutely curable yet it can be prevented by early interventions (Decramer 2010, p. 838). This requires comprehensive epidemic research and identification of major risk factors. Next is the application of possible preventive measures by the concerned national institutions.

Step 1: Assessment of all major risk factors – ‘All’ refers to the environmental and occupational factors other than tobacco smoking. Questionnaires would be of great assistance for this purpose. Inquiring people about their routine activities, workplace conditions, exposure to environmental pollution and further such questions would reveal the chief causes of COPD. Relevant data must be collected and analyzed to estimate the prevalence of smoking among the population. Amongst Western Australian native population, the smoking rate is around 55% for the people lying in the age group of 25 to 44 years (Nola Cecins 2012, p. 37). This suggests that youngsters have a potential risk of getting effected by COPD. Another chronic disease survey conducted by Australian Government (Begg S 2007) indicates that people of age over 30 stand first in the list of high risk groups with 8.4% percent of the total population having stage II to IV COPD.

Step 2: Highlight the need for COPD prevention – this refers to the significance of awareness programs and publications for the acknowledgement of COPD related public health consequences. The Australian population is not yet fully aware of the early symptoms and implications of COPD. In order to make them realize the severity of the issue, all the key stakeholders must be taken on board. Based upon the epidemiology and research-based data; primary preventive measures must include identification of smokers, ex-smokers must be identified and subjected to smoking hazards awareness campaigns and smoking cessation programs (AIHW 2005, pp. 40-42). While, the secondary approach includes screening, periodic health examination and limiting the exposure to hazardous risk factors (Singh 2008, p. 283). For predominant disease, management and control is more applicable rather than prevention (Nola Cecins 2012). Continuous care, self-management, respiratory rehabilitation, and referral protocol are few ways that can be adapted to prevent acute exacerbations of COPD.

Step 3: make possible interventions at different stages – smoking cessation, medication, oxygen therapy and pulmonary rehabilitation. Early intervention strategies include smoking cessation,

reducing exposures to respiratory irritants, and early participation in management programs (AccessEconomics 2008, pp. 60-65). Different other actions are applied relative to the severity of the disease. Smoking cessation proves to slow down the lung deterioration for long-term in people with early diagnosis of COPD. Medication is helpful to control and prevent the symptoms in people suffering from exacerbations. This group mostly includes people aged above 55 years up to 84 years who are admitted in hospitals. Oxygen therapy is suggested for people having low oxygen level in their blood as a result of advanced COPD decline in prevalence. In Australia, the use of long term oxygen therapy has improved survival rates (AccessEconomics 2008, p. 50). People suffering from moderate to severe COPD are subjected to pulmonary rehabilitation activities that increase exercise toleration and improve health related quality of life. A study (Nola Cecins 2008) concluded that pulmonary rehabilitation provided in an Australian teaching hospital was associated with a reduction in COPD hospitalizations, and that the resultant savings outweighed the costs of providing the program.

Step 4: Prevention of COPD – primary, secondary and tertiary prevention. The GOLD (2008) report ‘Global Strategy for the Diagnosis, Management, and Prevention of COPD’ outlines strategies for management and prevention of COPD. The clinical management of COPD based on the GOLD methodology has four key components: (1) assess and monitor disease; (2) reduce risk factors; (3) manage stable COPD; (4) manage exacerbations. Health care providers must be involved in the primary prevention of COPD among healthy individuals through campaigns to eliminate cigarette smoking and other risk factors. Secondary prevention is made through early detection of airflow obstruction in asymptomatic individuals at risk. Tertiary prevention emphasizes control of COPD among those already affected.

The Australian government is making lawful efforts to limit tobacco smoking. Tobacco Products Control Amendment Act 2009 prohibits smoking on individuals under the age of 17. Nicotine Addiction Treatment Project and Australian Better Health Initiative (ABHI) are few anti-smoking organizations operating on national level. Many Ambulatory care services like; Healthy@Home, Hospital in the Home Services (HITH), Rehabilitation in the HomeService (RITH), Post Acute Care Services (PAC), Home Palliation or Home Hospice, Telehealth services and outpatient services are also successfully running in Australia. Yet, many Australians have got no access to rehabilitation and therapy services; plus lack of registered data in this area limits the analysis of these processes. Further, anti-pollution efforts are being made by the Department of Environment & Conservation and The National Health and Medical Research Council to decrease the incidence of environmental pollution.

Goal 3: Programs and Policies

Step 1: Support the workplace policies and programs that are successful- promote wearing of respiratory protective devices and smoking bans. This implies the observance of clean working environment in workplaces which requires assessment of all the current policies and programs already working in the society. Employers must be encouraged to observe workplace air quality

assurance policy; indoor smoking prohibition for workers; provision of funds for health risk appraisals along with workplace coaching and treatment interventions. This would be helpful in promoting awareness and result in early interventions and prevention of COPD. According to an Australian study conducted by Wakefield (Kirsten Bell et. al 2005), smoking bans have resulted in lower work-day consumption of tobacco as compared to leisure-day consumption. This shows a positive sign for successful implementation of workplace policies. There have also been signs of tension among the smokers and non-smokers on the smoking ban as smokers practice their right to smoke while the non-smokers have the right to pollution-free air.

Step 2: Legislations for smoking cessation – this calls for the government to play its role. Government interventions to cease smoking activity in public places like workplaces, hotels, restaurants, etc. are very helpful in reducing tobacco consumption in the country which ultimately results in lesser COPD prevalence and also controls the COPD-related symptoms. The Australian government has made lawful efforts to limit tobacco smoking. Tobacco Products Control Amendment Act 2009 prohibits smoking on individuals under the age of 17. Nicotine Addiction Treatment Project and Australian Better Health Initiative (ABHI) are few anti-smoking organizations operating on national level. Until the implementation of Tobacco Products Control Amendment Act 2009, people had a negative attitude regarding smoking ban in restaurants. Smokers were really annoyed of losing the smoking freedom. But the ratification of anti-smoking laws have resulted in a dramatic acceptance and positive attitude of educated population towards smoking bans in public places (Kirsten Bell et al. 2005). Further it aims that people must recognise the right to be protected from harm and to enjoy smoke-free air.

Step 3: Awareness Programs – use of media and other communication channels to promote awareness regarding COPD. Despite being Australia's one of the biggest killer's, community awareness is low. People suffering from COPD and their families, people with COPD risk factors, health professionals (especially primary care providers), provider systems, media, decision makers, policy makers, and the public; these all people need to be educated (Begg S 2007, pp. 23-27). People at stage I of COPD are rarely aware that their lung function is abnormal. Education and awareness campaigns should be introduced together with the expansion of self management programs to focus on exacerbation management and disease control. Further, women taking up smoking must also be made aware of the adverse effects of meternal smoking on their babies and other related disorders. Here, the medical practitioners may play a vital role to promote awareness and make mothers realize the disadvantages of meternal smoking.

Publications from Lung Foundation of Australia and Australian Institute of Health and Welfare are available to the public to promote COPD related awareness in order to prevent the disease.

COPD patients have earned their rights to disease diagnosis, care, education and treatment globally under the platform of the International COPD Coalition (ICC) in the form of COPD Patients' Global Bill of Rights. Australian Human Rights Commission has devised various standards regarding the rights of people suffering from COPD-related disability. 'Close the Gap

Campaign' launched in April 2007, has proved to be an advocate of COPD affected people and the government guaranteed to make every possible effort to facilitate the healthy living of its population.

Conclusion

In a nutshell, Chronic Obstruction Pulmonary Disease (COPD) constitutes the sixth largest health hazard responsible for multiple deaths. Its puts a great burden on the nations in terms of years of life lost. Several surveillance systems, interventions, prevention policies and programs are employed against COPD as a part of national public health approach, yet immense efforts must be made to haul COPD prevalence, minimize its incidence, manage its exacerbations and fight back the disease to safeguard the people of Australia.

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