Lung Cancer Risk Among Cigarette Smokers in Hill Region of Nepal

Pramod Bhatta
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Abstract: Lung cancer is one of the top and leading cancer killers. It remains major public health problem in Nepal as that in rest of the world. The problem is hiking due to continuation of smoking, chewing tobacco, drinking alcohol etc. The underlying factors of growing lung cancer might be geographical difficulties, poverty, low education and low awareness level, social acceptance etc. in Nepal. The problem is much severe in the low and middle income countries and Nepal also is one of them facing different challenges in cancer care and prevention. Objective of the study was to assess the risk of lung cancer in people of Nepal. The data was collected from record analysis from sample size of 800 cancer patients at BP Koirala Memorial Cancer Hospital (BPKMCH), Chitwan Nepal from year 2009 to 2013 AD. The study research design was quantitative, descriptive and cross sectional. The study data presented as frequency table and cross tables. Binary regression test was applied to analyze risk and significance. The results showed 47.1% cancer patients were from Hill region. 50.3% lung cancer patients were from age group 41 to 60 years. Similarly 39.9% lung cancer patients were smokers. The risk analysis showed 2.06 times higher risk of lung cancer among smokers than that of non-smokers with significant association. The study result showed further need of research in causes of smoking behavior and lung cancer.

Key words: Cigarette smoking, Hill region, Lung Cancer, Nepal, Risk

1. Introduction

1.1 Background

Cancer is abnormal cells formation with uncontrolled cell growth in any part of body. These cells are capable of invading nearby organs to distant organs termed known as metastasis which is the major cause of cancer death (Fact sheet, 2017). Majority or one third of cancer deaths are linked with behavioral factors such as diet, tobacco and alcohol use, obesity or high body mass index, lack of physical activity, low fruit and vegetable intake. Lung cancer is the leading cancer site in males, comprising 17% of the total new cancer cases and 23% of the total cancer deaths, similarly the mortality burden for lung cancer among females in developing countries is accounting for 11% of the total female cancer deaths (Jemal, Bray, Center, Ferlay, Ward, & Forman, 2011.). The study shows that among males, lung cancers are most common followed by oral cancer, while among females; breast and cervix uteri cancers have the highest incidence (World Health Organization, South East Asia Region, 2011). The report of KK Pradhananga et al. showed that lung cancer was most common site of cancer in both sexes in Nepal (Pradhananga, Baral, & Shrestha, 2009 ).

Cancer is becoming a public health problem in developing countries as in rest of the world. Poor health facilities, lack of equipments, treatment cost etc. is posing threat of increasing incidence of cancer in developing countries (Naghavi, 2015 ). The shift in disease pattern in observed since past in Nepal. People mostly suffered from communicable diseases in past days whereas suffering is more due to non communicable diseases such as Hypertension, Cancer, Diabetes, CVA etc. at present days. Cancer is a major cause of morbidity and mortality, with approximately 14 million new cases and 8 million cancer-related deaths in 2012, affecting populations worldwide (World Cancer Report, 2014). According to Joshi, cancer is the second most frequent cause of death in developed countries after cardiovascular diseases accounting for 21% of all deaths (Joshi, 2003). Cancer problem is rising worldwide in coming days which was cited in the article of Thun et al. that there will be estimated around 26 million new cancer cases causing 17 million cancer deaths per year by the year 2030 (Thun, DeLancey, Center, Jemal, & Ward, 2009).

Lung cancer is one of the six most frequently occurring cancers (Orbak, Bayraktar, Kavrut, & Gu¨ndogdu, 2005 ). Most people with Lung cancer smoke tobacco and the risk of developing these cancers is related to how much and how long they smoked or chewed (American Cancer Society, 2016). There are various risk factors associated with lung cancer that includes smoking, alcohol drinking, food habit etc. But the major risk factor is tobacco use and their usages in various forms such
as smoking and chewing tobacco are prevalent in Nepal. This habit not only affects an individual’s health but also the overall well being. The habit of tobacco consumption affected to the people with low income leaving them to poor health outcomes. Janabaz et al. mentioned in their research paper that there are more than twenty-five carcinogenic compounds such as tobacco-specific nitrosamines (TSNAs), lead, cadmium etc. and tobacco smoking was linked with risk of lung cancer (Janbaz, Qadir, corresponding, Bassir, Bakheri, & Ahmad, 2014).

Lung cancer problem is causing high morbidity and mortality. The problem is horrible in developing world due to less awareness, inadequate preventive and curative care. Nepal belongs to the low and middle income countries and faces other challenges such as geographical difficulties, transportation, poverty and poor awareness as well in cancer care. Similar cancer problem was mentioned in the paper of Jemal et al. “Cancer survival tends to be poorer in developing countries, most likely because of a combination of a late stage at diagnosis and limited access to timely and standard treatment”(Ahmedin Jemal, 2011). Despite of all preventive efforts such as advertisement of smoking hazards, tax increments in cigarette and other efforts, there is still less change in smoking pattern and lung cancer cases. The present study was to explore the lung cancer in smokers from Hill region of Nepal. Since there is not much data on cancer distribution in Nepal as mentioned in the study of V S Binu et al. that there was no reliable information about the incidence or pattern of cancer in Nepal. In the hospital based study Binu et al. showed lung cancer in 22.2% males and 20% in females of Western Development Region of Nepal (Binu, et al., 2007).

Objective
To assess the risk of lung cancers among smokers in Hill region of Nepal.

2. Materials and methods
The data was collected from the BP Koirala Memorial Cancer Hospital, Chitwan Nepal. The hospital record survey data was collected based on sample size calculation which was total of 800 diagnosed cases of cancer. There were 160 case details retrieved from hospital record of the cancer patients each year from 2009 to 2013 in Hill region of Nepal. The study was purposefully divided in the region Hill and Terai. It was divided by the Chure mountain range which runs from east to west of Nepal. North of this mountain range was Hill and on south Terai.

The study research design was quantitative, descriptive and cross sectional. The data of 800 cancer patients’ records were analyzed using purposively prepared checklist to gather relevant information from hospital records. The study data presented as frequency table and cross tables. The regression test was applied to analyze risk and significance test of the cancer risk relation. In the study other risk factors kept constant and tobacco chewing habit was studied. The study was further justified with Key Informant Interview and observations. Ethical approval was received from Nepal Health Research Council for the study.

3. Results and Discussion

3.1 Cancer patients distribution from year 2009 to 2013 AD
The initial results here describe about patients distribution of five years, information on age groups of the cancer patients.

The following table shows the of cancer cases from year 2009 to 2013 in Hill region

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Source: Field survey, 2015

The data presented in above table showed that 45.6%, 51.9%, 34.4%, 51.9%, and 51.9% in Hill from year 2009 to 2013. The cancer patients were almost same during the year of observations. Except for year 2011 and 2009 more patients were from Hill region than Terai. In total more 47.1% of the cancer patients were from Hill region in the years of observation.

3.2 Lung Cancer case distribution based on age group
Age group of the patients were found as described from the table below.

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There were 15.0% cancer patients of age group 21 to 40 years, that from age group 41 to 60 years were 50.3%, similarly the age group of 61 and above was 34.6% from the data of cancer patients. From the above table the highest age group who developed cancer were 41 to 60 followed by the group 61 years and above. The findings suggest that the age of patients was above 40 who developed cancer.

### 3.3 Cancer case distribution by body parts and lung cancer with smoking habit

The table below showed the

<table>
<thead>
<tr>
<th>Habit of cigarette smoking</th>
<th>groups of cancer (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lungs</td>
<td>Others</td>
</tr>
<tr>
<td>Yes</td>
<td>39.9%</td>
<td>60.1%</td>
</tr>
</tbody>
</table>

Source: Field Survey, 2015

The above table showed that showed that there were 39.9% lung cancer cases and rest 60.1% were other cancers (oral, breast, cervix, uterus, gastric, colon, skin etc.) among the smokers group. The study of Pradhan et al. in their study showed that 52.73% of the patients found to be either smoker or ex-smoker. Other study of Chen et al. also found the risk of lung cancer was high among those with the cigarette smoker (Chen, et al., 2004). The result suggested that almost half of the people who smoked cigarette had lung cancer which was also observed in the study of Pradhan et al. and Chen et al. The finding shows that the cigarette smokers are at risk of developing lung cancer.

### 3.4 Lung cancer risk analysis among cigarette smokers

Following table gives the lung cancer risk analysis with the habit of cigarette smoking

<table>
<thead>
<tr>
<th>Variables in the Equation</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung Cancer</td>
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<td></td>
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Source: Field Survey, 2015

The analysis finding of above table in lung cancer showed that there was 2.06 times more risk of developing lung cancer with highly significant relation \( P = 0.000 \) (CI = 95% and degree of freedom \( df = 1 \)) among the person who were cigarette smokers than those who did not smoke. Study findings of other researcher also showed positive correlation of smoking and carcinoma of lung patients (Pradhan, Shakya, & Shrestha, 2014). Similarly, Furrukh stated that there was strong link between smoking and Small Cell Lung Cancer (SCLC) as well as squamous-cell carcinoma (SCC) (Furrukh, 2013). Findings of other researches also showed that the risk of lung cancer was high among smokers.

So from different studies the finding suggested that there was significant association of smoking cigarette with lung cancer. From the study it is evident that there is need of further study in strategies to eliminate and if not minimize the consumption of tobacco. Similarly there is further need to investigate other risk factors associated with oral cancer.

Result of this study also showed that there was strong association of smoking and lung cancer in Nepal. The finding was further supported from the interview with oncologists in cancer hospital who mentioned that smoking was major lung cancer risk factor.

### 4. Conclusion

Cancer cases were more in Hill region in the years of observation. Cancer cases were more in the age group 41 to 60 years. Lung cancer risk was 2.6 times high among cigarette smokers compared to those who never smoked. From the study it is evident that there is need to develop further strategies to eliminate or at least to minimize the consumption of cigarette which will help in lowering the lung cancer risk. Similarly there is need to investigate on smoking behavior and people awareness on lung cancer risks.

### Acknowledgement

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References


