Oral Cancer Risk among Tobacco Chewers in Nepal

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Abstract: Cancer remains terror for the people since long back. People suffered with it but knowingly or unknowingly most of the people continued the cancer risk behavior such as smoking, chewing tobacco, drinking alcohol etc. Nepal belongs to the low and middle income countries facing different challenges in cancer care and prevention which includes geographical difficulties, poverty, and low awareness level etc. Despite of all cancer preventive and curative efforts there is still less change observed in cancer care. Objective of the study was to assess the risk of oral cancers among tobacco chewers. 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. The regression test was applied to analyze risk and significance. The results showed 52.9% cancer patients were from Terai and 47.1% from Hill region and the cancer patients were highest with 50.7% from age group 41 to 60 years. Oral cancer was found in 39.5% and tobacco chewing habit in 44.4% cancer patients. Similarly risk of oral cancer was 4.6 times more in tobacco chewers than non-chewers with highly significant association. The study result showed further need of research in tobacco chewing behavior and other risk factors associated with oral cancer.

Key words: Nepal, oral cancer, risk, tobacco chewers

1. Introduction

1.1 Background

Cancer is a generic term for a large group of diseases that can affect any part of the body. Around one third of deaths from cancer are due to the 5 leading behavioral and dietary risks: high body mass index, low fruit and vegetable intake, lack of physical activity, tobacco use, and alcohol use. One defining feature of cancer is the rapid creation of abnormal cells that grow beyond their usual boundaries, and which can then invade adjoining parts of the body and spread to other organs, the latter process is referred to as metastasizing. Metastases are a major cause of death from cancer (Fact sheet, 2017). 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).

Cancer is becoming a great public health problem in developing countries like Nepal. People mostly suffered from communicable diseases in past days. At present people here mostly suffered from non communicable diseases such as Hypertension, Cancer, Diabetes, CVA etc. Cancer poses a major threat to public health worldwide, and incidence rates have increased in most countries since 1990. The trend is a particular threat to developing nations with health systems that are ill-equipped to deal with complex and expensive cancer treatments (Naghavi, 2015). 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).

Oral cancer is one of the six most frequently occurring cancers and squamous cell carcinoma (SCC) is commonest (Orbak, Bayraktar, Kavrut, & Gu’ndogdu, 2005). Most people with oral cavity and oropharyngeal cancers use 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 oral cancer that includes oral hygiene, alcohol drinking, food habit etc. But the major risk factor is tobacco use and its usage in various forms such as smoking and smokeless are prevalent in Nepal. This habit not only affects an individual’s health but also the overall well being. The worst hit by this habit are the low socioeconomic strata, who succumb to this habit and finally to its detrimental effects on their health. From different studies it was evident that...
tobacco containing product is unsafe for human health. From the research paper of Janabaz et al., there are more than twenty-five compounds in smokeless tobacco which have cancer causing activity. Use of smokeless tobacco has been linked with risk of oral cancer. Smokeless tobacco contains tobacco-specific nitrosamines (TSNAs), polonium, formaldehyde, cadmium, lead, and benzo[a]pyrene, which are carcinogenic agents (Janabaz, Qadir, corresponding, Basser, Bokhari, & Ahmad, 2014).

Cancer problem is big in developing world due to less awareness, inadequate preventive and curative care. Nepal belongs to the low and middle income countries and other challenges are geographical difficulties, transportation, poverty and poor awareness. Similar finding was admitted 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 tobacco related hazards, tax increments in tobacco products and other efforts there is still less change in tobacco consumption pattern and oral cancer cases. The present study was to explore the relation of tobacco chewing and its relation to the risk of oral cancer. 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 (Binu, et al., 2007) the study would support on further research on the oral cancer care.

**Objective**

To assess the risk of oral cancers among tobacco chewers.

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 records of the cancer patients each year from 2009 to 2013 at BP Koirala Memorial Cancer Hospital, Bharatpur, Chitwan, Nepal. For the study purpose the region was divided into Hill and Terai which was divided by the Chure mountain range. The mountain 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 sample of 160 patients’ record each year was selected by simple random sampling from year 2009 to 2013 AD. 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. For the study ethical approval was received from Nepal Health Research Council.

3. **Results and Discussion**

### Frequency table

#### 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

<table>
<thead>
<tr>
<th>Year of Observation</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td></td>
</tr>
</tbody>
</table>

**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 and it was 54.4%, 48.1%, 65.6%, 48.1% and 48.1% were cancer patients in Terai from year 2009 to 2013. The cancer patients were slightly high from Terai which was 52.9% whereas it was 47.1% in Hill region. It might be due to the availability and accessibility of health service was better in Terai region.

#### 3.2 Cancer case distribution based on age group

Age group of the patients were found as described from the table below

<table>
<thead>
<tr>
<th>Age group of Cancer patients</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>21 to 40</td>
<td>18.3</td>
</tr>
<tr>
<td>41 to 60</td>
<td>50.7</td>
</tr>
</tbody>
</table>
There were 18.3% cancer patients of age group 21 to 40 years, that from age group 41 to 60 years were 50.7%, similarly the age group of 61 and above was 31%. 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. Mean age of cancer patients was 53.49 as observed from record survey. The findings suggest that the age of patients was above 40 who developed cancer.

3.3 Cancer case distribution by body parts and oral cancer with chewing tobacco habit

The table below showed the

Table 3: Cancer case distribution by body parts and oral cancer with chewing tobacco habit

<table>
<thead>
<tr>
<th>Cancer</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>39.5</td>
</tr>
<tr>
<td>Oral cancer among Tobacco chewers</td>
<td>44.4</td>
</tr>
</tbody>
</table>

Source: Field Survey, 2015

From above table showed that there were 39.5% oral cancer, rest were other cancers (lung, breast, cervix, uterus, gastric, colon, skin etc.). Similarly there were 44.4% tobacco chewers. Oral cancer risk was 4.6 times high among tobacco chewers compared to those who never chewed tobacco. 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 to other risk factors associated with oral cancer.

3.4 Oral cancer risk analysis among tobacco chewers

Following table gives the oral risk analysis with the habit of tobacco chewing

Table 4: Oral cancer risk among tobacco chewers

<table>
<thead>
<tr>
<th>ORAL CANCER</th>
<th>Variables in the Equation</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>Df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1(a)</td>
<td>Tobacco Smoking</td>
<td>1.5340</td>
<td>79647</td>
<td>0.20</td>
<td>261</td>
<td>57.32</td>
<td>95119</td>
</tr>
</tbody>
</table>

Source: Field Survey, 2015

The analysis result of above table on oral cancer showed that there was 4.6 times more risk of developing oral cancer with highly significant relation P=0.000 (CI = 95% and degree of freedom (df) = 1) among the person who chew tobacco than those who did not chew tobacco. Findings of other researches also showed that the risk of smokeless tobacco users were at high. The study of Znaor et al. found that tobacco chewing as the strongest risk factor for oral cancer, with the highest odds ratio (OR) for chewing products containing tobacco of 5.05 (Znaor, et al., 2003) similarly in other study showed smokeless tobacco user had a significantly elevated risk of HNSCC (Head and Neck Squamous Cell Carcinoma) with odds ratio (OR) 4.06 compared to never used it (Zhou, Michaud, Langevin, McClean, Eliot, & Kelsey, 2013 ). Muwonge et al. found that Tobacco chewing was the strongest risk factor associated with oral cancer and the adjusted odds ratios (ORs) for chewers were 3.1 (Muwonge, et al., 2008).

So from different studies the finding suggested that there was significant association of tobacco chewing habit and oral cancer. Result of this study also showed that there was strong association of tobacco chewing and oral cancer in Nepal.

In the interview with oncologists in cancer hospital said that chewing tobacco and smoking increased the risk of oral cancer.

4. Conclusion

Cancer cases were more in Terai region in the years of observation. Cancer cases were more in the age group 41 to 60 years. Oral cancer risk was 4.6 times high among tobacco chewers compared to those who never chewed tobacco. From the study it is evident that there is need of further study in strategies to eliminate or at least to minimize the consumption of tobacco. Similarly there is further need to investigate to other risk factors associated with oral cancer.
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References


