

## CHAPTER III

### RESEARCH METHODOLOGY

#### 1. Case and control definitions

All newly diagnosed laryngeal cancer patients who attended the Laryngology Clinic , Department of Otolaryngology; Tumor Clinic, Siriraj Cancer Institute and the Department of Otolaryngology, Sriragarind Hospital, Khon-kaen from March 1996 to February 1997 were recruited in this study as cases. Whereas control subjects were in-patients from the Departments of Surgery; Ophthalmology; Orthopedic Surgery who were admitted in the same hospitals during the same period as the cases for elective surgery such as herniorrhaphy, gall bladder surgery, glaucoma and cataract surgery and spine surgery.

#### 2. Eligible criteria

##### 2.1 Inclusion criteria

1. Laryngeal cancer patients must have a histologically proven squamous cell carcinoma as the primary tumor.
2. Male patients (since 90% of laryngeal cancer patients are male)
3. Control subjects must have a normal larynx on examination by qualified laryngologists.

4. Agree to participate. ( patients's free inform consent )

## 2.2 Exclusion criteria

1. Control subjects who had prior diagnosis of cancer of the respiratory tract.
2. Control subjects who were admitted to the hospital with tobacco related diseases as the principle illness.
3. Cases and controls who were not able to directly communicate with the interviewers due to physical and mental disabilities.

All patients were excluded by a staff not involving in the interview process.

## 3. Sample size calculation

Since this is unmatched case-control study, the sample size, using two controls per case, was calculated from the following formula :

$$N = \frac{[ Z_{\alpha} \sqrt{(1+1/c) \bar{p}\bar{q}} + Z_{\beta} \sqrt{(p_1q_1 + p_0q_0/c)} ]^2}{(p_1 - p_0)^2}$$

Where  $c$  = number of control per case

$p_0$  = denoted the exposure rate of hand-rolled tobacco smoking among control which was estimated to be 20%.<sup>(36)</sup>

$q_0 = 1 - p_0$

$p_1$  = denoted the exposure rate of hand-rolled tobacco smoking among cases which was estimated to be 45%.<sup>(8)</sup>

$$q_1 = 1 - p_1$$

$$\bar{p} = \frac{(p_1 + c p_0)}{1 + c}$$

$$\bar{q} = 1 - \bar{p}$$

and we set  $\alpha$  at 0.05 ( two sides ) ,  $\beta = 0.1$  by using the above equation ,

$$N = \frac{[1.96\sqrt{1.5*.28*.72} + 1.28\sqrt{.45*.55 + .2*.8/2}]^2}{(0.45-0.2)^2}$$

$$= 52.27$$

The numbers of subjects were estimated to be 53 cases and  $2 \times 53 = 106$  controls

## 4. Measurements

### 4.1 Research instruments

A standard questionnaire was modified from the questionnaire designed by WHO Committee on Study of Smoking<sup>(37)</sup> ( Appendix 1) and it was inspected by 3 content experts for its content validity .

### 4.2 Exposure variables to be measured

#### Tobacco

The questions asked both cases and controls if they had smoked or not. In persons who smoked, the types of tobacco used, the daily amount of tobacco consumption and the duration of exposure ( in years ) were recorded. The time when stopped smoking was also notified in cases who had once smoked

and had quitted ( ex-smoker ). Since patients might change their habits of smoking due to the illness for the past several months , therefore data of this exposure were asked to compare 6 months previous to the time of interview. Although there might be some recall bias, the categories were set as broad as possible to minimize the chance of misclassification.

### Alcohol

Since the behaviour of alcohol drinking and types of alcohol consumption among the Thais are different from those of the western people. It was difficult to obtain accurate data from all subjects especially the amount of consumption. The questions asked the type , amount and frequency of alcohol drinking. Standard bottles and glasses commonly used in alcohol drinking were shown to the subjects who were asked to compare the amount they regularly consumed with these standard sizes. The amount of ethanol consumed was estimated as grams of alcohol (concentration in gram / 100 ml X volume ) per day.

### Dietary practice

The frequency of meat, egg, vegetables, fruits, pickled vegetables, chilly and salted meat consumption were inquired in both cases and controls. The questions started with whether they liked or disliked the mentioned food and how often within a week they consumed. The answers were recorded in number within a week or a month basic. For those who had less than once a week diet practice were considered as low or non consumption in that food items. Those who responded to 5 - 7 times a week consumption, were classified as heavy exposure or in almost every day consumption category.

### 4.3 Interview

The questionnaire was administered by two interviewers. Both were trained and tested for interview technique before hand. Interview manual was prepared to remind them for some variable definitions , codes and techniques. ( Appendix 2 ) The interview was last for 30 minutes. Two staffs were responsible for data collection and quality control maintenance both in Bangkok and Khon kaen.

### 4.4 Potential biases

Certain potential biases had been considered in this study. As mentioned before, controls were selected from a variety of admission diagnostic groups from the same hospitals during the same period as cases in order to minimize the selection bias. To avoid recall bias regarding data on past exposure, only new diagnosed cancer cases were recruited in this study and the interview was carried out as a part of the routine history taking during usual patient care. Questionnaire data were compared with data from patient's medical records to check for agreement between these different sources of information. To lessen information bias, neither the interviewers nor the patients were aware of the study's hypothesis at the time of interview.