Dietary patterns and risk of oral cancer: A factor analysis study of a population in Jakarta, Indonesia

Rahmi Amtha a,b,*, Rosnah Zain b, Ishak Abdul Razak b, Bastaman Basuki c, Boedi Oetomo Roeslan d, Walta Gautama e, Denni Joko Purwanto e

a,b Oral Medicine Department, Trisakti University, Kyai Tapa, Grogol, Jakarta Barat, Indonesia
b Oral Cancer Research Coordinating Centers (OCRCC), University of Malaya, Kuala Lumpur, Malaysia
c Community Medicine Department, University of Indonesia, Indonesia
d Biochemistry Department, Trisakti University, Indonesia
e Surgical Oncology Department, Dharmais National Cancer Hospital, Indonesia

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s u m m a r y

A matched case-control, hospital-based study of oral cancer was conducted in Jakarta population. The sample included 81 cases and 162 controls. The purpose of this study was to determine the association between dietary pattern and oral cancer in a Jakarta population using factor analysis. Dietary data were collected using food frequency questionnaire and factor analysis was performed on 15 food groups resulting in four principle factors/components being retained. The first factor “preferred” was characterized by fast food, fermented food, canned food, snacks high in fat and sugar, cooked and raw vegetables, and sea-food. The second factor labeled “combination” was loaded by the intake of dairy product, red meat, white meat and fruits. The third factor labeled “chemical related” was loaded by processed food and monosodium glutamate and the fourth principle component consisted of drinks and grain was labeled as “traditional”. The conditional logistic regression was done using STATA 8 to obtain the odds ratio (OR) of highest tertile of each component retained from factor analysis and the ORs were then adjusted with risk habits. The consumption the highest tertile of the “preferred” pattern increased the risk of oral cancer by two-times compared to the lowest tertile of consumption (adjusted odds ratio (aOR) = 2.17; 95% confidence interval (CI) = 1.05–4.50). The chemical related” pattern showed higher risk of about threefold (aOR = 2.56; 95% CI = 1.18–5.54), while the “traditional” pattern showed an increased of risk by twofold (aOR = 2.04; 95% CI = 1.01–4.41). In contrast, the “combination” pattern displayed protective effects in relation to oral cancer (aOR = 0.50; 95% CI = 0.24–1.00). This finding suggests that factor analysis may be useful to determine the diet pattern of a big set of food type and establish the correlation with oral cancer.

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Introduction

Oral cancer is one of the most common cancers worldwide.1 Tobacco smoking, alcoholic consumption and betel quid chewing have been found to be major risk factors. Besides that, epidemiological studies have shown that diet plays a role in many chronic diseases and various types of cancer including oral cancer.2,3 The American Institute for Cancer Research4 estimated that diet could account for approximately 30% of cancer deaths in United States, similar to the number accounted for by smoking.2 The World Health Organization acknowledges that up to 30% of human cancers are probably related to diet and nutrition. 5

Most of the epidemiological studies of diet in relation to oral cancer have been conducted in western countries while studies on food and dietary pattern and risk of oral cancer are scarce in the Asian regions. So far only three studies have been reported in Asian countries regarding the food and diet pattern in association with oral cancer.6,7 The most consistent findings in diet as a determinant of cancer risk is the association between consumption of vegetables and fruit in reducing risk of several cancers. About 80% of these studies found a significant protective effect of overall consumption of vegetables and/or fruit or at least some types of vegetables and fruits.8,9

Studies to determine the relationship between diet and oral cancer presents a challenge due to the complexity of the human diet. Such complexity arose from the fact that food may contain chemical compounds which are well-known for some, while many could not be measured and is still poorly characterized. However, most of these studies are confined to single aspect of food type

* Corresponding author. Address: Oral Medicine Department, Trisakti University, Kyai Tapa, Grogol, Jakarta Barat, Indonesia. Tel.: +62 811184174; fax: +62 215655787.
E-mail address: rahmi_amtha@yahoo.com (R. Amtha).

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