Title: The geriatric nutritional risk index is associated with the prevalence and mortality of periodontitis: a dose-response association study based on National Health and Nutrition Examination Survey

Journal name: *Clinical Oral Investigations*

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1. Eligibility criteria

Inclusion Criteria：

1） Participants with complete periodontal examination data；

2） Participants with complete geriatric nutritional risk index (GNRI) data；

3） Participants who aged ≥ 65 years；

Exclusion Criteria：

1） Participants with edentulous jaws；

2） Participants with only one dental examination site (not identifiable as periodontitis)；

3） Participants without follow-up information.

2. Covariates classification

The covariates consist of age status, gender, race/ethnicity, education level, smoking status, drinking status, physical status, hypertension (HTN) and hyperlipidemia (HPL)， diabetes, cardiovascular disease (CVD) and cancer.

We divide the age into three classes: 65-69 years old, 70-79 years old and80 years old and above; Gender is categorized into male and female; Race/ethnicity covered non-Hispanic white, non-Hispanic black, Hispanic and other race [1]; Education level was divided into less than high school, high school or equally and college or above [2]; Smoking status including never smokers (Smoked at least 100 cigarettes in life and smoke now), former smokers (Smoked at least 100 cigarettes in life but do not smoke now), and current smokers smoking (Smoked less than 100 cigarettes in life) [3]; Drinking status was classification as nondrinker (had less than 12 alcohol drinks lifetime) heavier drinker (average ≥ 2 alcoholic drinks/day for male or average ≥ 1 alcoholic drinks/day for female), light/moderate drinker (≥12 alcohol drinks lifetime but average < 2 alcoholic drinks/day for male or average < 1 alcoholic drinks/day for female) [4,5]; Physical activity was grouped by inactive (without self-reported leisure time physical activity), recommended (leisure time moderate activity ≥ 5 times or vigorous activity ≥3 times per week), insufficient (active but did not meet the recommended criteria) [6]; The diagnostic criteria for HTN were defined as average systolic blood pressure of ≥140 mm Hg or diastolic blood pressure ≥ 90 mm Hg, or self-reported doctor informed of hypertension, or receiving blood pressure control measures such as taken antihypertensive medication ; HPL defined as Serum cholesterol ≥ 200 mg/Dl, doctor informed of hyperlipidemia, or receiving cholesterol control measures; Cardiovascular diseases included self-reported physician-diagnosed coronary heart disease, congestive heart failure, heart attack, stroke, angina or other cerebrovascular and heart disease; Cancer was defined by self-report record. Detailed descriptions of the methods used for covariates measurement can be found on the NHANES website.

3. Details of the software usage

All data extraction, analysis, and plotting of images were performed using R software (version 4.1.1). Statistical significance was set at $p < 0.05$.“MICE” package was used to fill in missing values; the “GLM” package was used for logistic regression, the “survminer” and “survival” packages were used for Cox regression; the “rms” package

was used for RCS; and the “tableone,” “ggplot2” and “forestplot” packages were used to plot Tables and graphs.

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