ISRCTN29208116 https://doi.org/10.1186/ISRCTN29208116

Dental clinic blood sugar tests: early detection of high blood sugar and heart risk in Chinese patients

Submission date
25/02/2026

Recruitment status
No longer recruiting

Registration date
25/02/2026

Overall study status
Completed

Last Edited
25/02/2026

Condition category
Oral Health

[_] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[X] Record updated in last year

Plain English summary of protocol

Background and study aims
Diabetes affects more than 114 million people in China, of whom 40% are unaware of their condition. Many individuals only become aware of their diabetes when severe complications (e.g., kidney damage, blindness) develop. Prediabetes (a state of high blood sugar preceding diabetes) is even more prevalent, placing millions at risk of progressing to overt diabetes. Diabetes exacerbates severe periodontitis, while periodontitis in turn increases the difficulty of blood glucose control. This bidirectional relationship suggests that dental clinics could serve as ideal settings for early diabetes screening. However, this potential remains underrecognized in clinical practice.
We aim to calculate the prevalence of undiagnosed and uncontrolled hyperglycemia. Our primary objective is to explore the potential clinical value of fasting plasma glucose (FPG) screening in dental clinics as an integral component of integrated oral-systemic disease management, thereby providing evidence to support advancements in relevant policies and clinical practices.

Who can participate?
This is a retrospective study utilizing existing medical records. Eligible participants are adult patients (aged 18–80 years) who visited the Hospital of Stomatology, Xi'an Jiaotong University, between January 2015 and December 2025. Patients must have complete data, including basic information (age, gender, smoking status, and history of hypertension), dental X-ray findings (severity of periodontal disease, number of missing teeth), and blood test results (fasting blood glucose levels).
All medical records will be anonymized, with no personal identifying information used in the study.

What does the study involve?
We won't contact patients or perform new tests.
Key steps:
Review records: Pull data on health, dental status, and blood sugar.
Group patients: Sort into four categories based on blood sugar and prior diagnosis: Normal

(healthy sugar), Undiagnosed prediabetes (high sugar, no prior diagnosis), Undiagnosed diabetes (meets diabetes criteria, no prior diagnosis), Known diabetes (already diagnosed).
Use statistical methods to analyze the prevelence and association of periodontitis, diabetes, and cardiovascular disease.

What are the possible benefits and risks of participating?
Risks: None. We use anonymized, existing records, without risk to privacy or health.
Benefits: No direct benefit to patients in the study. But future patients could gain:
Early detection of diabetes/prediabetes via dental clinics.
Timely treatment to lower risk of complications (kidney disease, blindness, nerve damage).
More accessible screening for a condition that often goes unrecognized.

Where is the study run from?
Location: Xi'an Jiaotong University Hospital of Stomatology (Xi'an, China).

When is the study starting and how long is it expected to run for?
Data will be gathered during January 2026

Who is funding the study?
The work was supported by a grant from the Natural Science Foundation Research Program of Shaanxi Province (2025JC-YBQN-1088), National Science Foundation for Post-doctoral Scientists of China (2025M782747), and Postdoctoral Fund of Shaanxi Province.

Who is the main contact?
Principal Investigator: Wang Miao (Xi'an Jiaotong University)
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This study is a small but important step toward making diabetes screening easier. By helping dentists spot undiagnosed cases early, we hope to improve health outcomes for millions of people.

Contact information

Type(s)
Principal investigator, Scientific, Public

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Study information

Scientific Title
Fasting plasma glucose screening in Chinese dental patients for early detection of hyperglycemia and cardiovascular risk: a large-scale retrospective study

Study objectives

Ethics approval required
Ethics approval required

Ethics approval(s)
approved 24/09/2025, Medical Ethics Committee, Stomatology Hospital, Xi'an Jiaotong University (No. 98, Xiwu Road, Xincheng District, Xi'an, 710004, China; +86 29-87221131; xjkqll@163.com), ref: KY-QT-20250027

Primary study design
Observational

Secondary study design
Epidemiological study

Study type(s)

Health condition(s) or problem(s) studied
Hyperglycemia and cardiovascular disease in patients with periodontitis

Interventions
1. Collect baseline data-including socio-demographic information, medical history, and FPG results-of patients treated at Xi'an Jiaotong University Stomatological Hospital from January 2015 to December 2024.
2. By matching age and gender, patients are randomly screened into subgroups to collect complete clinical data (medical history, FPG results, comprehensive periodontal assessment, and complete hematology/coagulation characteristics)
3. For participants included in the subcohort, collect the following data from their prior medical visit records: personal and disease history, including demographic information (age, sex, ethnicity, etc.), health status (presence of systemic diseases such as hypertension or diabetes), medication use, and smoking status.
4. Collect imaging data for periodontitis diagnosis: A periodontist or trained dentist will review the participant’s prior oral and maxillofacial CBCT or panoramic radiographs to classify the severity of periodontitis based on imaging findings, using the 2017 AAP/EFP classification criteria.
5. Collect results of blood tests: Retrieve the participant’s prior fasting plasma glucose (FPG), complete blood count, liver function tests, and coagulation test results.

Intervention Type
Other

Primary outcome(s)
1. Fasting plasma glucose (FPG) level measured using venous blood sampling at participants' visit day for dental treatments

2. Periodontal status measured using radiographic bone loss (RBL) at participants' visit day for dental treatments

Key secondary outcome(s))

Completion date
25/02/2026

Eligibility

Key inclusion criteria
1. Sex: Both male and female subjects are eligible to participate in this study.
2. Age: Subjects aged 18 to 80 years (inclusive) are eligible.
3. Medical history: Subjects who received dental care at the Stomatological Hospital of Xi'an Jiaotong University.
4. Medical records: Subjects with complete dental records and general health records.

Healthy volunteers allowed
Yes

Age group
Mixed

Lower age limit
18 years

Upper age limit
80 years

Sex
All

Total final enrolment
40136

Key exclusion criteria
Uncomplete dental and medical records.

Date of first enrolment
01/01/2015

Date of final enrolment
31/12/2025

Locations

Countries of recruitment
China

Sponsor information

Organisation
Xi'an Jiaotong University

ROR
https://ror.org/017zhmm22

Funder(s)

Funder type

Funder Name
Natural Science Foundation Research Program of Shaanxi Province

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not expected to be made available