Here are SQL scripts to create and populate the database based on the ERD. This includes the **Hospitals**, **Patients**, and **Visits** tables, along with sample data entries to get you started.

1. Database Creation and Table Schema

```
sql
Copy code
-- Create the database
CREATE DATABASE RuralHealthcare;
USE RuralHealthcare;

-- Create Hospitals table
CREATE TABLE Hospitals (
    hospital_id INT PRIMARY KEY,
    name VARCHAR(100) NOT NULL,
    location VARCHAR(50) CHECK (location IN ('Urban', 'Rural')),
    facilities TEXT
);

-- Create Patients table
CREATE TABLE Patients (
    patient_id INT PRIMARY KEY,
    name VARCHAR(100) NOT NULL,
    age INT CHECK (age > 0),
    gender CHAR(1) CHECK (gender IN ('M', 'F'))
);

-- Create Visits table
CREATE TABLE Visits (
    visit_id INT PRIMARY KEY,
    date DATE NOT NULL,
    treatment_type VARCHAR(100),
    hospital_id INT,
    patient_id INT,
    FOREIGN KEY (hospital_id) REFERENCES Hospitals(hospital_id),
    FOREIGN KEY (patient_id) REFERENCES Patients(patient_id)
```

```
);
```

2. Sample Data Insertion

Populate each table with initial data for testing and analysis.

```
sql
Copy code
-- Insert sample data into Hospitals
INSERT INTO Hospitals (hospital_id, name, location, facilities)
VALUES
    (1, 'Central Hospital', 'Urban', 'Emergency, Surgery,
Pediatrics'),
    (2, 'Green Valley Clinic', 'Rural', 'General Medicine,
Pediatrics'),
    (3, 'Hilltop Health Center', 'Rural', 'Emergency, Maternity');

-- Insert sample data into Patients
INSERT INTO Patients (patient_id, name, age, gender)
VALUES
    (1, 'Alice Smith', 29, 'F'),
    (2, 'Bob Jones', 45, 'M'),
    (3, 'Carol White', 37, 'F'),
    (4, 'David Brown', 52, 'M');

-- Insert sample data into Visits
INSERT INTO Visits (visit_id, date, treatment_type, hospital_id,
patient_id)
VALUES
    (1, '2024-10-01', 'General Checkup', 2, 1),
    (2, '2024-10-02', 'Emergency', 1, 2),
    (3, '2024-10-05', 'Maternity', 3, 3),
    (4, '2024-10-10', 'Pediatrics', 1, 4),
    (5, '2024-10-12', 'General Checkup', 2, 2);
```

3. Data Retrieval Queries

These queries help retrieve data based on the project's requirements.

- **Query to List All Rural Hospitals**:

```
sql
Copy code
SELECT name, location, facilities
FROM Hospitals
WHERE location = 'Rural';
```

- **Query to Count Visits per Hospital**:

```
sql
Copy code
SELECT hospital_id, COUNT(visit_id) AS total_visits
FROM Visits
GROUP BY hospital_id;
```

- **Query to Find Patients Who Visited a Rural Hospital**:

```
sql
Copy code
SELECT Patients.name, Patients.age, Patients.gender, Hospitals.name AS
hospital_name
FROM Patients
JOIN Visits ON Patients.patient_id = Visits.patient_id
JOIN Hospitals ON Visits.hospital_id = Hospitals.hospital_id
WHERE Hospitals.location = 'Rural';
```

- **Query for Average Age of Patients in Rural Areas**:

```
sql
Copy code
SELECT AVG(Patients.age) AS average_age
FROM Patients
JOIN Visits ON Patients.patient_id = Visits.patient_id
```

```
JOIN Hospitals ON Visits.hospital_id = Hospitals.hospital_id
WHERE Hospitals.location = 'Rural';
```

4. Analysis Query Examples

- **Most Common Treatment Types in Rural Hospitals**:

```
sql
Copy code
SELECT treatment_type, COUNT(treatment_type) AS frequency
FROM Visits
JOIN Hospitals ON Visits.hospital_id = Hospitals.hospital_id
WHERE Hospitals.location = 'Rural'
GROUP BY treatment_type
ORDER BY frequency DESC;
```

- **Total Visits by Patient Demographics (Gender)**:

```
sql
Copy code
SELECT Patients.gender, COUNT(visit_id) AS visit_count
FROM Patients
JOIN Visits ON Patients.patient_id = Visits.patient_id
GROUP BY Patients.gender;
```