

Research Article

Mobile Dental Units: Role in Periodontal Care and Global and Indian Perspectives

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ABSTRACT

Mobile Dental Units (MDUs) are an important alternative model for delivering oral healthcare to populations facing geographic, socioeconomic and mobility-related barriers. They function as mobile or portable dental facilities providing screening, preventive care and selected basic treatment at community locations. Their relevance to periodontics is substantial because periodontal diseases represent a major oral health burden, particularly among underserved populations. The Indian National Oral Health Survey reported periodontal disease prevalence of 67.7% among 15-year-olds and 89.6% among adults aged 35-44 years. MDUs can contribute to periodontal disease control through community screening, oral hygiene education, plaque and calculus control, scaling, prophylaxis, selected non-surgical periodontal therapy and referral of advanced cases. Globally, MDUs have been successfully implemented among rural communities, schoolchildren, migrants, elderly and homebound individuals and socially disadvantaged populations. In India, they provide an opportunity to address urban-rural disparities and limitations in availability, affordability and accessibility of dental services. Integration with dental institutions, primary healthcare facilities, tele-dentistry and structured referral systems can strengthen their role in community periodontal care.

Keywords: Mobile Dental Unit, Mobile Dentistry, Periodontics, Periodontal Disease, Scaling, Oral Hygiene, Rural Dentistry, Dental Public Health, India.

1. INTRODUCTION

Access to oral healthcare remains a global public health challenge because of geographic inaccessibility, financial limitations and unequal distribution of dental personnel and facilities. Oral diseases affect a substantial proportion of the global population, emphasizing the need for accessible preventive and primary oral healthcare services.

Mobile Dental Units (MDUs) provide dental services at locations where patients live, study or receive institutional care rather than requiring them to attend conventional dental clinics. They may function as self-contained dental vehicles or as portable dental facilities established temporarily at schools, community centres, institutions and other outreach locations. Their principal functions include oral health education, disease screening, preventive care and basic treatment for underserved populations.

2. Need for Mobile Dental Units

MDUs are particularly useful for rural populations, individuals with disabilities, elderly and homebound patients, economically disadvantaged communities, schoolchildren and populations with limited transportation. These groups may experience barriers related

to availability, accessibility, affordability and acceptability of conventional dental services.

In India, unequal distribution of dental services and limited rural oral-health infrastructure create an important need for alternative delivery models. The MDU provides a mechanism for bringing preventive and basic curative services directly to underserved communities.

3. Global Scenario of Mobile Dental Units

The development of mobile dentistry has historical roots in military and field-based dental services. Mobile dental facilities were subsequently developed for civilian populations, particularly communities experiencing geographic and socioeconomic barriers. South Africa established an early community-based mobile dental clinic in 1924, while mobile programmes subsequently expanded across several countries.

Internationally, MDUs have been used for school-based programmes, rural communities, migrant workers, elderly and homebound populations, homeless individuals and other vulnerable groups. Programmes have provided oral health education, examinations, scaling, prophylaxis, preventive care, basic restorative treatment and referral for specialized services.

Mobile dentistry has therefore evolved from an emergency-oriented model into a broader public-health approach incorporating prevention, early intervention, treatment and linkage with comprehensive dental services.

4. Indian Scenario of Mobile Dental Units

India faces substantial disparities in access to oral healthcare, particularly between urban and rural populations. The National Oral Health Survey and Fluoride Mapping 2002–03 reported periodontal disease prevalence of 67.7% among 15-year-olds and 89.6% among adults aged 35–44 years, demonstrating the considerable periodontal burden in the country. The use of MDUs in India has expanded through dental institutions and public-health programmes. The Dental Council of India incorporated mobile dental services into postgraduate Public Health Dentistry programmes, and mobile dental vans have been utilized by postgraduate dental institutions for outreach services.

An Indian study evaluating an indigenous portable dental unit reported 52,900 patients treated through 223 rural camps, demonstrating the potential reach and cost-efficiency of portable mobile dental services.

Thus, MDUs can serve as an important bridge between dental institutions and communities that have limited access to fixed dental facilities.

5. Role of Mobile Dental Units in Periodontics

Periodontal care represents an important component of MDU-based oral healthcare because prevention, early diagnosis and control of plaque and calculus can be delivered using relatively portable equipment.

5.1 Periodontal Screening

MDUs can undertake community-based periodontal screening through assessment of gingival inflammation, plaque and calculus, periodontal probing where feasible, tooth mobility and identification of patients requiring comprehensive periodontal evaluation. Screening enables early identification of disease in populations that may not routinely attend dental clinics.

5.2 Oral Hygiene Education

Oral hygiene instruction is a fundamental component of periodontal prevention. MDUs can provide individual and group education regarding toothbrushing, interdental cleaning, plaque control and maintenance of oral hygiene. Demonstration-based education can be particularly effective in school and community settings. Mobile programmes

routinely incorporate oral health education as part of their services.

5.3 Scaling and Prophylaxis

Scaling and prophylaxis are among the most appropriate periodontal procedures for mobile settings. Mobile dental equipment can incorporate ultrasonic scaling systems, and published MDU programmes have reported scaling and prophylaxis among services provided.

These interventions can reduce plaque and calculus accumulation and provide an opportunity for reinforcement of individual oral-hygiene practices.

5.4 Non-Surgical Periodontal Therapy

Selected patients may undergo non-surgical periodontal treatment, including scaling and root planing, when appropriate equipment, trained personnel and infection-control facilities are available. A mobile dental programme for elderly and handicapped patients reported scaling and root planing among the treatments provided.

5.5 Periodontal Risk Assessment and Referral

MDUs can identify patients with advanced periodontal disease requiring comprehensive periodontal evaluation. Patients presenting with extensive periodontal destruction, deep periodontal pockets, significant mobility or other complex clinical findings should be referred to fixed dental clinics or periodontal specialists.

This referral-based approach is important because complex periodontal surgery is generally not feasible within conventional mobile dental facilities because of limitations related to space, equipment and power supply.

5.6 Periodontal Maintenance

Repeated visits to the same geographical locations can allow MDUs to establish periodontal recall and maintenance programmes. Periodic reassessment, oral-hygiene reinforcement and professional plaque/calculus removal may improve continuity of periodontal care in underserved populations.

6. Global Role of MDUs in Periodontics

The periodontal role of MDUs globally is predominantly focused on prevention, screening, early intervention and maintenance. Mobile programmes have demonstrated the feasibility of delivering oral examinations, oral hygiene instruction, scaling and prophylaxis to rural, migrant, elderly, homeless and other vulnerable populations.

For elderly and homebound populations, mobile care can overcome transportation and mobility barriers while permitting delivery of basic periodontal treatment.

However, mobile periodontal services should complement rather than replace fixed specialist services. Advanced periodontal surgery and other complex procedures generally require referral to appropriately equipped dental facilities.

7. Role of MDUs in Periodontics in India

The role of MDUs in Indian periodontics is particularly relevant because of the high reported burden of periodontal disease and disparities in access to dental services.

An effective Indian MDU periodontal programme should incorporate:

- Community-based periodontal screening.
- Oral hygiene and plaque-control education.
- Scaling and prophylaxis.
- Selected non-surgical periodontal therapy.
- Periodontal risk assessment.
- Identification and referral of advanced periodontal cases.
- Periodontal maintenance and recall.
- Tobacco cessation and general oral-health counselling.
- Collaboration with dental colleges and fixed periodontal clinics.
- Integration with community health workers.
- Tele-dentistry-assisted specialist consultation where feasible.

The source literature specifically recommends collaboration between dental personnel, school teachers, dental hygienists, village health guides, ASHA workers and Anganwadi workers, together with tele-dentistry, to improve outreach services.

This model can transform the MDU from an episodic treatment facility into a community periodontal prevention and early-intervention platform.

8. Equipment and Staffing

A periodontal MDU should include a dental chair, ultrasonic scaler, suction, adequate water supply, sterilization equipment, periodontal instruments, appropriate radiographic facilities where permitted, emergency equipment and biomedical-waste management systems. The described MDU equipment includes dental chairs, scalers, suction systems, autoclaves and portable radiographic equipment.

Staffing may include a registered dentist, dental assistant/hygienist and dental health educator, with additional personnel according to the

scope of services. Indian postgraduate MDU programmes commonly involve faculty, postgraduate students, interns and auxiliary staff.

9. Challenges

MDUs have several operational limitations, including maintenance and fuel costs, travel and setup time, limited space, equipment failure, record-management difficulties and challenges in ensuring continuity of care.

Infection control is particularly important because the restricted environment and aerosol-generating dental procedures may increase contamination risks. Appropriate sterilization, environmental cleaning, ventilation and biomedical-waste management are therefore essential.

For periodontics, the principal limitation is the inability to provide complex periodontal surgical procedures in most mobile settings. Consequently, a well-defined referral pathway is essential.

10. Recommendations

1. MDUs should prioritize periodontal prevention, screening and early intervention.
2. Scaling and prophylaxis should be included as core periodontal services.
3. Selected non-surgical periodontal therapy may be provided where facilities and trained personnel are available.
4. Advanced periodontal cases should be systematically referred to fixed periodontal clinics.
5. Electronic records should be maintained to facilitate periodontal follow-up and recall.
6. Tele-dentistry should be incorporated for specialist consultation and referral.
7. Indian MDUs should be linked with PHCs, CHCs, dental colleges and community health workers.
8. Periodontal outcomes should be monitored using standardized indicators such as number screened, treatment provided, referrals completed and recall adherence.
9. Infection-control protocols should be standardized across MDU programmes.
10. Government and academic institutions should support sustainable MDU programmes through funding, infrastructure and trained personnel.

11. DISCUSSION

MDUs represent an important adjunct to conventional dental services and are particularly valuable where geographical, socioeconomic or mobility barriers restrict

access. Their principal strength is the ability to bring preventive and basic clinical services directly to underserved populations.

From a periodontal perspective, their greatest contribution is in screening, oral-health education, plaque and calculus control, scaling, prophylaxis, selected non-surgical therapy and referral. This approach is particularly relevant in India because of the substantial reported burden of periodontal disease and unequal distribution of dental services.

A structured periodontal MDU programme can therefore follow a simple continuum:

SCREEN → EDUCATE → TREAT → REFER → RECALL

Such integration can strengthen the connection between community-level periodontal prevention and specialist periodontal care.

12. CONCLUSION

Mobile Dental Units provide a practical model for extending oral healthcare to underserved populations. Their role in periodontics is particularly important because periodontal disease is highly prevalent and prevention and early intervention can be delivered through relatively portable dental services. MDUs can effectively provide periodontal screening, oral hygiene education, scaling, prophylaxis and selected non-surgical periodontal treatment, while advanced periodontal disease should be referred to fixed specialist facilities. Globally, MDUs have demonstrated their value among rural, migrant, elderly, homebound and socially disadvantaged populations. In India, they offer an important strategy for reducing disparities in periodontal healthcare.

Integration of MDUs with dental colleges, primary healthcare facilities, community health workers, tele-dentistry and structured referral systems can establish a sustainable community-based periodontal care pathway and improve access to preventive and early periodontal treatment.

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