

High Prevalence of Dental and Periodontal Problems in Pregnant Female Population of Rural India

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Abstract

Dental and periodontal problems are common in pregnant women, more so in women belonging to low socioeconomic strata and those living in rural areas. Severe periodontal diseases can lead to adverse birth outcomes like preterm delivery and low birth weight babies. Although largely preventable through evidence based interventions, periodontal diseases are highly prevalent in the pregnant female population of rural India.

The single best strategy to approach this problem is providing oral health education to these females. However, currently there are no existing policies to address this issue. We propose integrating an "Oral Health" component in the antenatal care program. Training health professionals and ASHAs to deliver this information is a cost effective, efficacious and feasible policy option requiring minimum effort on the part of stakeholders.

Keywords: *Dental Health Education; Health Policy; India; Pregnancy Dental Health*

Context

"You lose one tooth for every baby you have" is a commonly held myth regarding oral health and pregnancy. A woman's pregnancy experience is often related to one or both of the two most prevalent diseases of the oral cavity, namely dental caries and periodontitis. Hormonal changes during pregnancy are associated with increased risk of gingivitis, a milder form of and precursor to more severe periodontal disease [1,2], making pregnant women more vulnerable to oral health issues. Studies suggest an association between severe periodontal disease and adverse birth outcomes such as preterm delivery and infant low birth weight [3-5]. Other hypothesized associations are with diseases like atherosclerosis [6], rheumatoid arthritis [7], diabetes [8] and increased chances of offspring suffering from early and severe dental caries [4,9].

Although largely preventable through evidence-based interventions, both periodontal disease and caries in women of child bearing age are highly prevalent across the world, particularly among low-income women and members of racial and ethnic minority groups [10-12]. Also, the perceived barriers to dental care access may be greater for pregnant women because the window of treatment is limited to the second trimester (approximately 4 months). It has also been observed that general practitioners and midwives are inadequately informed about the impact of poor maternal oral health and rarely investigate this issue during prenatal care. Many general practitioners also believe that all dental procedures are unsafe during entire pregnancy [13]. Despite the large proportion of pregnant women who have dental problems, 40% of them do not visit dentist during pregnancy, and the majority of those who utilize dental services do so only in the event of dental pain [4,13-15]. A research conducted in Sri Lanka shows that pregnant women in rural areas had a significantly higher

experience of decayed and filled teeth. They had twice as many untreated dental caries, compared with urban women but were unlikely to use oral healthcare services due to concerns about safety in receiving dental care during pregnancy. Moreover, almost 60% of rural women presented with bleeding gums. Similarly, the prevalence of calculus was 30.3% for rural women and 13.5% for urban women [16].

India, with just 2.4% of world’s area, contains over 17.5% of the world’s population [17]. As per the 2011 Census in India, 94.34% of the total area is rural and supports 68.68% of total population (833,748,852). Females comprise 48.69% of the total rural population (405,967,794) and 62% of the female rural population is below 45years. This is the population of interest of this policy analysis paper [18]. According to the health department of Haryana 80% of the Indian population suffers from diseases of teeth and gums. Due reasons discussed below this rate is higher in the pregnant female population [19].

Issue

Although women receive basic prenatal counseling on proper nutrition, exercise, and diagnostic tests that are appropriate during pregnancy, discussion of oral health and hygiene is often not provided, neither pursued by the patients [20]. It is well documented that there is an increase in levels of progesterone and estrogen during pregnancy, which in turn causes vasodilation and hence inflammation of gums [21]. Apart from hormonal imbalance during pregnancy there is a complex array of factors that contribute to poor oral health in the population of interest. The primary cause is lack of knowledge and acknowledgement of significance of teeth. Shortage of time and cultural beliefs associated with dental treatments contribute to complexity of the problem, for example belief that brushing your teeth causes bleeding of gums, or that, undergoing extraction an upper molar causes loss of vision. Fear of dental treatment, whether derived from prevailing community beliefs or personal negative dental experiences, might cause these women to defer dental treatment. Absence of affordable dental care also remains a major barrier, especially for women from socioeconomically disadvantaged background, since there is limited access to public dental services and the cost of private dental treatment is very high [22]. Additionally, preventive dental examination and treatment is not given as much weight by both dental professionals and policymakers in rural areas in developed countries [23]. Another major concern is that health care professionals (e.g. dentists, doctors, and midwives) are unsure whether various dental treatments can be safely performed on pregnant women. This uncertainty about whether dental care is safe for pregnant women makes dentists postpone dental care until after pregnancy, despite recent evidence that postponing dental care is even more dangerous for their health [20,24]. Another factor contributing to inadequate health care services in these areas is unwillingness of new health care professionals to settle in rural areas. These areas with their limited resources, lack of modern amenities like internet or even basic amenities like road and not very attractive to young doctors (Figure 1).

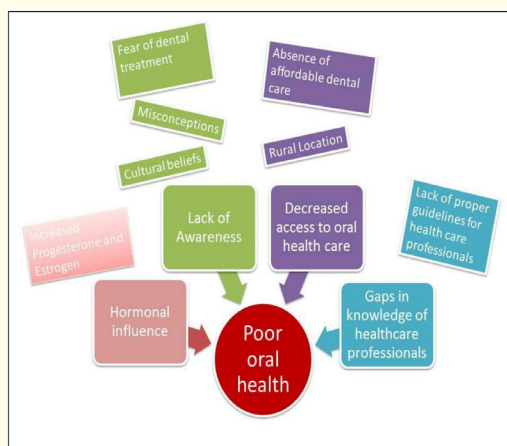


Figure 1: Causal Analysis.

Factor contributing to poor oral health in the pregnant female population of rural India

Current policies and Programs

Internationally, various oral health promotion initiatives are being advocated including enhanced screening and referral services in preconception [25] and anticipatory guidance programs for mothers to prevent early childhood caries [26]. For example, Health Canada has published "Sensible Guide to Healthy Pregnancy" and which has an entire section dedicated to "Oral health" [27].

In India, various government, semi-government and non-government organizations have been working towards promoting oral health in rural areas. Although, there are no concrete governmental policies in place, also, none of the existing programs target the pregnant women. Few existing programs include, health education campaigns organized by civil hospitals, various charitable or private hospitals and dental colleges across the country. Oral health promotion, disease prevention and health care should be a part of the local, state and national health policy agendas [28].

Policy Alternatives

Over the years, a number of interventions have been proposed to address various aspects of this issue. For example, Teledentistry and mobile dental clinics address the 'access to health care' aspect of this problem [19,29]. Government of India has proposed to increase the number of Dental surgeons in various primary healthcare centres. However, none of these approaches address the root cause of the problem - lack of awareness. Time and again health educators across the globe have stressed the importance of health education [2,5,12,15,22,28,30-34]. Despite the positive international evidence, limited importance is being given to the oral health of pregnant women in rural India.

Option 1: Oral health education to pregnant females Improved oral health has been demonstrated in children born to mothers who were offered oral health education during pregnancy [26,33]. Policy option 1 proposes a new oral health promotion program to target the pregnant female population in rural India. Using internet as a media resource would likely not be feasible in the target population since they would not have access to it, although, television and radio commercials could potentially be employed to this effect. Door to door campaigns, street skits and puppet shows may also be used. Newspaper advertisements and educational pamphlets is another alternative to internet but with a female literacy rate of only 66.7%, it might not be as efficacious [17]. Advantages and disadvantages of this policy option have been discussed in the Table 1.

Option 2: Oral health assessment as a part of comprehensive prenatal care Primary healthcare providers are in unique position to provide health education to pregnant females. Performing oral examination at the time of antenatal interview can highly improve the oral health awareness of mothers [34,36]. An oral health history, oral health education, dental screening and dental referral should be a routine part of prenatal care [15]. Therefore, health care providers should ensure that they educate their patients about importance of oral health during pregnancy [4,12,13,15,30,31,34,37].

Presently there are 23,236 Primary Health Care Centers (PHC) and 145,000 sub-centers in India. PHC's are the cornerstones of medical care in pregnancy and child birth in rural India [38]. Apart from these, there are ASHA (Accredited Social Health Activist) workers in every village of India instituted by Government of India, Ministry of Health and Family Welfare under NRHM (National Rural Health Mission) [39]. ASHA's are primary female resident of village who have volunteered and have been selected to serve, and are likely to remain in the village in foreseeable future. ASHA's serve as a key link between the healthcare system and rural population in need of healthcare. Addition of an "Oral health component" to the ASHA training program would enable these "social health activist" to provide quality oral health education along with other health information. Major advantage of this policy option is that it ensures exposure of the target population to oral health education during the prenatal visits of ASHAs. It is also cost effective since it negates the need to employ separate work force.

	Option 1	Option 2	Option 3
Government	† Implementing a healthy public contributes to good Government record § Political capital investment in implementing the program	† Implementing a healthy public contributes to good Government record † Minimum Investment on part of government	† Minimum responsibility of government in implementation of this policy § Negotiating with the dental council to bring a change in curriculum might be a challenge
Target population	† Health awareness § No change in access to healthcare § Difficulty in changing age old cultural beliefs	† Health awareness † Access to healthcare problem may potentially be resolved to some extent § Difficulty in changing age old cultural beliefs	† Health awareness † Better access to oral health-care services § Mistrust issues with student practitioners § Difficulty in changing age old cultural beliefs
Healthcare practitioners	† Potential increase in number of patients due to awareness	† Potential increase in number of patients due to awareness † Less confusion associated with practice norms in pregnant females due to definite guidelines § Time invested in training and later in health education of patients	† Future health practitioners i.e. student interns might object to rural postings, § Student practitioners would get more exposure and opportunity to practice cultural competency.
Dental Colleges and Council	Neutral	Neutral	§ Might object to changing curriculum

Table 1: Stakeholder Analysis.
 †Advantage §Disadvantage

Option 3: Rural postings of dental students India has 305 dental colleges, with approximately 21,000 dental graduates every year [40]. According to the Dental Council of during internship might be an alternative to lack of health care providers in rural areas. This policy alternative would helps create culturally competent future dental health practitioner. Although distrust in fresh graduates/ student practitioners might be an issue of concern. It would also requires investment of time money and effort on part of the dental colleges.

Lessons Learnt

Most promising policy option based on the criteria matrix in Table 2 is “Oral health assessment as a part of antenatal care”. It is plausible, cost effective, administratively feasible and has been proven to be efficacious [33]. This policy option utilizes already existing resources and programs to address the root cause of the problem i.e. lack of awareness. Implementation of this policy requires minimum investment by the government i.e. for training programs for health care practitioners and ASHAs. Primary health care centres are principally located in rural areas and come under state jurisdiction. This policy would have a high public acceptability because health educa-

tors are people trusted by the target population (Health care providers and ASHA workers). I conclusion this policy alternative has high predicted acceptability and feasibility making it easier to implement.

Scale (0-5)	Option 1 Oral health education to pregnant females	Option 2 Oral health assessment as a part of comprehensive prenatal care	Option 3 Rural Posting of Dental students
Cost effectiveness	3	4	5
Effectiveness	3	4	3
Public acceptability	3	4	2
Administrative feasibility	3	3	2
Sustainability	3	4	4
Cultural sensitivity	4	5	3
Total	19	24	19

Table 2: Criteria Matrix.

1-Not recommended; 2- Maybe recommended; 3-Weak ecommendation; 4-Recommended; 5- Strongly recommended

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