



Short Communication

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# Providing Oral Health Awareness and Screening to Low Income, Urban Pregnant Women: A Developing Country Perspective



Irosha Rukmali Perera<sup>1\*</sup>, Manosha Lakmali Perera<sup>2</sup> and Thilini Kulathunge<sup>3</sup>

<sup>1</sup>Preventive Oral Health Unit, National Dental Hospital (Teaching) Sri Lanka, Sri Lanka

<sup>2</sup>Department of Medical Laboratory Science, General Sir John Kotalawala Defense University, Sri Lanka

<sup>3</sup>Restorative Unit B, National Dental Hospital (Teaching) Sri Lanka

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**\*Corresponding author:** Irosha Rukmali Perera, Preventive Oral Health Unit, National Dental Hospital (Teaching) Sri Lanka, Sri Lanka

## Abstract

Pregnancy transforms the life cycle of a woman garnered by fulfilling multidimensional needs with regard to physical, psychological, social and spiritual health. Therefore, investing in health of a pregnant woman provides the benefit of an intergenerational health gains by ensuring not only a safe motherhood but a healthy mother and a baby as well. There is an array of concerns with regard to the oral health status in pregnancy varying from aggravation of the existing oral diseases, increased risk of adverse pregnancy outcomes to transmission of cariogenic bacteria from mother to the baby. Therefore, providing oral health care for pregnant women has been incorporated into the existing health care delivery models in countries. Against this backdrop, present short communication aims to showcase the performance of a community based oral health awareness and screening programme for culturally diverse, low income, urban pregnant women in the main city of Sri Lanka: a developing country. The findings may help to establish similar programmes for pregnant women in other developing country settings.

## Background & Justification

Sri Lanka is a lower-middle-income developing country demonstrating a vibrant public health care delivery model with an estimated population of 21.6 million [1]. A well-organized maternal and child health (MCH) programme was in place since 1968, which contributed significantly to notable gains in reducing maternal and infant mortality rates [2]. The Family Health Bureau functioning under the Ministry of Health of Sri Lanka is the focal point for this programme comprising of maternal health, child's health, women's health and family planning. Antenatal care is one of the core elements of the MCH component provided through a network of medical institutions and Medical Officer of Health (MOH) based antenatal clinics managed via line Ministry and provincial health administration [3]. Pregnant women are eligible to receive antenatal and MCH care free of charge from the public health system, irrespective of their socio-economic status and geographic location and have a minimum of 5 contacts with the primary health care team. This service model achieves a 98% antenatal care coverage.

Oral health care has been incorporated into the existing national MCH programme since the year 2009 with practice guidelines to foster life cycle approach to promote oral health status of the mother and the child by providing comprehensive care

during antenatal and post-natal periods with continued follow up of care [4]. The specific objectives of this programme are described as follows:

- a) To reduce the complications of existing poor oral health status during pregnancy
- b) To control the incidence of early childhood dental caries (ECC) by reducing the risk of transmission of cariogenic bacteria from the mother to the baby.
- c) To reduce the incidence of possible adverse pregnancy outcomes attributed to poor maternal oral health
- d) To educate the pregnant mothers on taking care of teeth and oral health of her baby and other children of the family

According to the National Oral Health Programme for pregnant mothers, all pregnant mothers need to get screened for oral diseases and receive dental treatment. Hence, all pregnant women who visit antenatal clinics are being referred to nearby dental clinics such as hospital dental clinics, community dental clinics, MOH dental clinics etc. Oral health education sessions are also delivered to pregnant women combined with other health edu-

cation programmes such as lactation management, nutrition and other MCH-related topics using antenatal clinics as the health promotion setting.

Oral health education session makes the pregnant mother aware of the importance of optimal oral health status during pregnancy for the health and well-being of the mother and the baby. Moreover, it will positively motivate the mother to take care of baby's oral health. There is evidence for high burden of oral diseases among pregnant women. For example, a published study which compared oral disease burden of rural and urban pregnant women in Sri Lanka (459 rural pregnant women in their 2nd trimester and 348 urban pregnant women in their 3rd trimester reported 91.7% prevalence of dental caries among rural mothers and 81.3% for urban pregnant women. Moreover, 93% of pregnant women both rural and urban had gingivitis and periodontal disease [5].

Pregnancy marks an important milestone in the life-course of a woman compounded by the dual phenomenon of pregnancy affecting the oral health status of a woman and oral health status impacting on pregnancy outcomes. Pregnancy makes a woman more vulnerable to common oral diseases such as dental caries and periodontal disease if oral health is not maintained during this crucial period [5]. Changes in dietary habits and oral hygiene practices are common in pregnancy. For example, frequent intake of snacks, food cravings and difficulties in maintaining oral hygiene i. e. brushing teeth due to morning sickness exacerbated by acid reflux could increase the risk for dental caries. Hence, a pregnant woman is at increased risk for developing new caries as well as exacerbation of existing dental caries. Moreover, the increased production of oestrogen and progesterone may give rise to development of gingivitis due to increased vascular permeability [5]. Moreover, lack of maintenance of oral hygiene compounded by alterations in oral bacteria with rising periodontopathic bacterial counts could make a pregnant woman more prone to developing periodontitis. Moreover, recent studies have reported the resemblance of placental microbiome and phylogenetic proximity to the pregnant mothers' oral microbiome [6,7]. Hence, there is evidence for biologically plausible mechanisms for the link between maternal periodontitis and increased risk for adverse pregnancy outcomes such as pre-eclampsia, pre-term birth, restarted foetal growth and low-birth weight. Further, a recent systematic review and meta-analysis reported that pregnant women periodontitis was associated with significantly high prevalence of gestational diabetes mellitus compared to women without periodontitis [8]. Against this backdrop, it was decided to implement an oral health awareness, screening for oral diseases and referral for oral health care for pregnant mothers attending Colombo Municipal Council (CMC) antenatal clinics, catering to culturally diverse, low income urban pregnant mothers in the main city of Sri Lanka.

Following reasons provided the justification for the planned programme.

- a) CMC ante-natal clinics do not function under the purview of the conventional Medical Officer of Health (MOH) system
- b) CMC ante-natal clinics cater to pregnant women from socially disadvantaged and culturally diverse backgrounds
- c) It seems that the cohort of pregnant women from CMC region carry a high burden of untreated dental caries and periodontal disease
- d) Moreover, despite wide availability of public and private dental clinics there are access blocks in receiving oral health care in pregnancy due to socio-cultural and structural barriers

### Methodology

A pilot project was conducted in July 2011 in selected two antenatal clinics of CMC, namely Forbes Road and Modera. Dental Surgeons attached to the Preventive Oral Health Unit (Community Dental Unit) of the former Dental Institute (present National Dental Hospital (Teaching) Sri Lanka visited the two clinics. The transport was funded by the Consultant in Community Dentistry by hiring private cab services. The programme was expanded to include all antenatal clinics in 2013.

The oral health awareness programme was conducted with lactation management and nutrition programmes which included importance of oral health in pregnancy, common oral health problems in pregnancy, main risk factors for dental caries and periodontal diseases, importance of good oral health for the baby and taking care of oral health baby and other children in the family. These awareness programmes were conducted as interactive sessions. The feedback of the participating mothers was obtained with regard to 'take home messages'. All the mothers were screened for oral diseases and referred to the dental clinics of a Tertiary Care Public Hospital for Women in the city, nearby public dental clinics (based on the convenience to the pregnant mother) as well as to the Preventive Oral Health Unit, National Dental Hospital (Teaching) Sri Lanka.

A special oral health awareness leaflet was prepared and printed in main native languages: Sinhala and Tamil languages and distributed among all participating mothers. Oral health awareness leaflet for the pregnant mothers was developed by the Preventive Oral Health Unit and funded by the Oral Health Promotion Fund of Deputy Director General (Dental Services), Ministry of Health, Sri Lanka. Moreover, a leading local tooth brush manufacturing company volunteered to provide adult tooth brushes to be distributed among participating mothers as a reward for taking part in the oral health programme. The team comprised of a Dental Surgeon and Nursing Officers attached to the Preventive Oral Health Unit. The back and forth transport for the team is provided by the maternal and child health services of the Colombo Municipal Council. These arrangements provide an example for win-win situations by multi-stakeholder partic-

ipation to achieve the final output of high coverage of pregnant mothers for oral health awareness, screening and referral.

### Main Output Measures

The main outcome indicators: screening coverage and referral of pregnant women for oral health care for the years from 2015-2018 are shown in Table 1. The oral health screening coverage for pregnant women with oral health awareness has demonstrated an increasing trend of 58.8 %, 59.4% and 77.3% for the years 2015, 2016 and 2017 respectively (Table 1). Consequently, a similar trend was evident in the referral for oral health care percentage ie. for untreated dental caries and periodontal diseases for the respective years. However, in the year 2018, the screening percentage was low due to shortages of service providers which resulted in limited service provision which did not cover all antenatal clinics. However, the referral percentage was high which could be attributed to high oral disease burden carried by the pregnant mothers who did participate in the screening services (Table 1).

**Table 1:** Oral health awareness & Screening Coverage and prevalence of oral diseases among pregnant women attended the Colombo Municipal Council antenatal clinics from 2015-2018.

Year	Total Number Screened/ Total Number of Registered Mothers	Oral Health Awareness & Screening Coverage	% Of Screened Referred for Oral Health Care
2015	NA	58.8%	62.2%
2016	4375/7370	59.4%	78.3%
2017	3898/5043	77.3%	86.6%
2018	3971/7858	50.5 %	85.8%

### Discussion

Pregnancy denotes an important physiological event in a women's life course. Moreover, pregnancy transforms the life cycle of a woman garnered by multidimensional health needs with regard to physical, psychological, social and spiritual well-being. The implications and the impact of investing in health of a pregnant woman provides the benefit of an intergenerational health gain by ensuring not only a safe motherhood but a healthy mother and a baby as well. There is an array of concerns with regard to the oral health status of a pregnant woman varying from aggravation of existing oral diseases, increased risk of adverse pregnancy outcomes to transmission of cariogenic bacteria from the mother to the baby [6-9]. Therefore, providing oral health care to pregnant women has been a priority issue for health care delivery models both in developed and in developing countries.

Sri Lanka as developing middle income country offers oral health care to pregnant mothers as a national programme [4]. A recent published study has shown that caries prevalence and severity of 3-year-old children was significantly lower among mothers who received oral health advice and care during pregnancy than children of mothers who did not receive the package during pregnancy [10]. This finding sheds light into the poten-

tial of pregnant mothers' oral health programme to reduce the burden of early childhood dental caries among children which has reached epidemic proportions in many developing countries. Importantly there is research evidence to suggest that that on the first 48 hours of life, the new-born gains a major part of his/her oral microflora from the mother which includes dental caries producing oral bacteria from untreated active dental caries of the mother [9]. Present short communication described the performance appraisal by main output indicators of a community based oral health awareness and screening programme for culturally diverse, low income, urban pregnant mothers in the main city of Sri Lanka: a developing country. Pregnant women from low income, urban settings in developing countries could be considered as a high risk group for oral diseases attributed their socio-cultural determinants and insufficient awareness and concern on their oral health status.

As shown in Table 1, the oral health awareness and screening coverage has increased from year 2015 to 2017 but there was an obvious drop in the year 2017. Acute staff shortage and resultant low service coverage was the reason for this drop. Such a scenario highlights importance of providing adequate, for example Dental surgeons to screen the mothers. Moreover, present model was able to build the capacity of both Dental Surgeons and Nursing Officers to conduct the interactive oral health awareness session for the pregnant women. Building the capacity of middle level and primary care health providers for health awareness for women provides a cost effective strategy for promotion of women's health status.

There is evidence to suggest that oral health awareness on pregnant women in important aspects is deficient even in developed countries [10]. Therefore, routine oral health awareness and screening for oral diseases as well as referral for oral health care should be a core component of preventive and promotive oral health care provided for pregnant women both in developed and developing countries [11].

### Conclusion

- a) Pregnant women of culturally diverse, low income urban developing country context deemed high risk group for dental caries and periodontal disease attributed to an array of socio-cultural and life-style related factors. This could be attributed to an array of socio-cultural determinants of them.
- b) Sustainable models of targeted interventions through life-cycle approach with prioritized public oral health programmes need to be implemented with multi-stakeholder holder participation.
- c) The oral health awareness and screening coverage and referral percentage provides some main output indicators for a given pregnant women oral health programme, However, compliance for referrals and treatment completion as outcome indicators need to be assessed.

d) Oral health programmes for pregnant women need prioritization, resource allocation aimed at impacting on improved oral health status of pregnant women and declining trends in the burden of Early Childhood Caries among children in long term.

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