

ABSTRACT

Background Oral health is one aspect that is often neglected during pregnancy. One of the oral problems that is often experienced by pregnant women (periodontal disease) is the second largest problem in Indonesia (73.5%). Pregnancy also allows for a shift in the composition of the oral microbes. Periodontal abnormalities and a shift in the composition of microbes can cause unwanted pregnancy side effects, such as low birth weight babies and premature births.

Purpose This study purpose was to analyze the IL-6 and TNF- α levels, the expression of *Porphyromonas gingivalis* bacteria and the oral hygiene status (OHI-S) and to determine the oral microbiome profile of third trimester pregnant women.

Materials and Methods This was an observational analytic study with a cross-sectional study design. Subjects consisted of 37 third trimester pregnant women (17 good OHI-S groups, 20 fair OHI-S group) who were classified into the inclusion criteria. After subjects were asked to fill out questionnaires and their oral cavity was examined, saliva and swab samples were taken. The salivary IL-6 and TNF- α levels were measured using the ELISA method, while *P.gingivalis* bacterial expression was measured using real time PCR (qPCR). Microbium profiles of third trimester pregnant women were identified using conventional PCR and electrophoresis gels, and sequenced to determine the bacterial diversity.

Results There was a significant increase in IL-6 and TNF- α in the fair OHI-S group when compared to the good OHI-S group ($p=0.010$ & $p=0.005$). There was no significant difference in the expression of *P.gingivalis* in the control group compared with the case group ($p=0.557$). There was a significant relationship between the OHI-S and TNF- α concentration in third trimester pregnant women. There was no significant relationship between IL-6 and TNF- α concentrations with *P.gingivalis* bacterial expression ($p=0.595$ & $p=0.580$). The microbium profile of third trimester pregnant women is dominated by the genus *Streptococcus* in both groups.

Conclusion Based on the results of this study, there is no relationship between the increase in pro-inflammatory cytokines with the presence of periodontal disease in third trimester pregnant women. However, oral hygiene still considered as an important aspect that must be taken seriously during pregnancy.

Keywords OHI-S, IL-6, TNF- α , *P.gingivalis*, oral microbiome

ABSTRAK

Latar Belakang Kesehatan rongga mulut merupakan salah satu aspek yang sering diabaikan pada saat kehamilan. Salah satu masalah rongga mulut yang sering dialami ibu hamil (penyakit periodontal) merupakan masalah kedua terbesar gigi dan mulut di Indonesia (73,5%). Kondisi kehamilan juga memungkinkan adanya pergeseran komposisi mikroba rongga mulut. Kelainan periodontal dan adanya pergeseran komposisi mikroba dapat menyebabkan terjadinya efek samping kehamilan yang tidak diinginkan, seperti berat bayi lahir rendah dan kelahiran prematur.

Tujuan Menganalisis kadar IL-6, TNF- α , ekspresi bakteri *Porphyromonas gingivalis* dan status kebersihan mulut (OHI-S) serta mengetahui profil mikrobioma rongga mulut ibu hamil trimester ketiga.

Metode Jenis penelitian merupakan penelitian observasional analitik dengan rancang studi *cross-sectional*. Subyek merupakan 37 ibu hamil trimester ketiga (17 kelompok OHI-S baik, 20 kelompok OHI-S sedang) yang telah memenuhi kriteria inklusi. Setelah subyek mengisi kuisisioner dan diperiksa keadaan rongga mulutnya, pengambilan sampel saliva dan swab dilakukan. Kadar IL-6 dan TNF- α diukur dengan menggunakan metode ELISA, sedangkan ekspresi bakteri *P.gingivalis* diukur dengan menggunakan *real time* PCR (qPCR). Profil mikrobioma ibu hamil trimester ketiga diidentifikasi dengan menggunakan PCR konvensional dan gel elektroforesis yang selanjutnya di sekuensing untuk diketahui keberagamannya.

Hasil Terdapat peningkatan yang signifikan pada IL-6 dan TNF- α kelompok OHI-S sedang apabila dibandingkan dengan kelompok OHI-S baik ($p=0.010$ & $p=0.005$). Tidak terdapat perbedaan yang signifikan pada ekspresi *P.gingivalis* kelompok OHI-S sedang apabila dibandingkan dengan kelompok OHI-S baik ($p=0.557$). Terdapat hubungan yang signifikan antara indeks kesehatan mulut dengan produksi TNF- α ibu hamil trimester ketiga. Tidak terdapat hubungan yang signifikan antara kadar IL-6 dan TNF- α dengan ekspresi bakteri *P.gingivalis* ($p=0.595$ & $p=0.580$). Profil mikrobioma ibu hamil trimester ketiga didominasi oleh bakteri genus *Streptococcus* baik pada kelompok OHI-S baik dan OHI-S sedang.

Kesimpulan Berdasarkan hasil penelitian ini, tidak terdapat hubungan antara peningkatan sitokin pro-inflamatori dengan adanya penyakit periodontal pada ibu hamil trimester ketiga. Meskipun demikian, kebersihan mulut merupakan aspek penting yang harus diperhatikan saat kehamilan.

Kata kunci OHI-S, IL-6, TNF- α , *P.gingivalis*, mikrobioma rongga mulut