

ABSTRACT

Pool disinfection process is generally carried out by chlorination. Chlorine has characteristics that can make the water turns acidic and irritating. The effect on the swimmer is dental erosion and skin irritation. The purpose of this study was to analyze the effect of residual chlorine levels of the pool water, the characteristics, and the behaviors of swimming student organization members on the incidence of dental erosion and skin irritation.

This type of research is observational analytic cross sectional study. Sampel as many as 28 people. The sampling technique is systematic random sampling. Water sampling technique is grab sampling. The dependent variable of this study was dental erosion and skin irritation. The independent variables included residual chlorine levels, age, sex, the time of joining, history of dental disease, swimming frequency and duration, swimming hours, consumption of soft drinks, milk, and vitamin C, frequency of brushing teeth/day, brushing teeth before sleeping, gargling water after swimming, rinsing the body after swimming, and the use of sunblock. Data analysis using binary logistic regression. Data collection were questionnaires, interviews, laboratory tests chlorine residual levels of the pool water by BBLK Surabaya, as well as the examination of the degree of dental erosion respondents by dentists.

The results of the measurement of residual free chlorine levels showed that 5 out of 6 samples tested had results that did not meet quality standards. There is an influence between the time of joining ( $p = 0.03$ ), the frequency of swimming ( $p = 0.014$ ), and the duration of the swim ( $p = 0.034$ ) to the incidence of dental erosion. There is an influence between the levels of residual chlorine swimming pool water ( $p = 0,046$ ), the frequency of swimming ( $p = 0,043$ ), and the duration of the swim ( $p = 0,049$ ) to the incidence of skin irritation.

It can be concluded if the factors that affect erosion are the time of joining, swimming frequency and duration. Factors affecting skin irritation are the levels of residual chlorine, swimming frequency, and duration. Suggesting pool party for monitoring the quality of the pool water, reducing chlorine dose, and for members of the swimming student organization in UNESA to always gargle water or consume water frequently during swimming activities so that the mouth is not dry, and the saliva pH remains neutral.

Keywords : *dental erosion, levels of residual chlorine, swimming pool, skin irritation*

ABSTRAK

Proses desinfeksi kolam renang pada umumnya dilakukan dengan klorinasi. Klorin memiliki karakteristik yang dapat membuat sifat air berubah asam dan mengiritasi. Pengaruhnya terhadap perenang adalah dapat menyebabkan erosi pada gigi dan iritasi kulit. Tujuan penelitian ini adalah menganalisis pengaruh kadar sisa klor air kolam renang, karakteristik, dan kebiasaan anggota UKM Renang terhadap kejadian erosi gigi dan iritasi kulit anggota UKM Renang UNESA.

Penelitian ini menggunakan metode observasional analitik dengan desain *cross sectional*. Populasi pada penelitian ini adalah anggota UKM Renang UNESA dengan besaran sampel 28 orang. Teknik pengambilan sampel yaitu *systematic random sampling*. Teknik pengambilan sampel air yaitu *grab sampling*. Variabel terikat penelitian ini adalah erosi gigi dan iritasi kulit. Variabel bebas meliputi kadar sisa klor, umur, jenis kelamin, lama bergabung di UKM renang, riwayat penyakit gigi, frekuensi berenang, durasi berenang, jam berenang, konsumsi *softdrink*, susu, serta vitamin C, frekuensi menyikat gigi/hari, kebiasaan menyikat gigi sebelum tidur, berkumur air putih setelah berenang, kebiasaan membasil badan selesai berenang, serta penggunaan *sunblock*. Metode pengumpulan data dengan pengukuran sisa klor, observasi, kuesioner, wawancara, dan pemeriksaan dokter yang kemudian hasilnya dianalisis menggunakan uji regresi logistik biner.

Hasil pengukuran kadar sisa klor bebas menunjukkan 5 dari 6 sampel yang diuji memiliki hasil yang tidak memenuhi baku mutu. Dari uji regresi logistik biner diketahui variabel yang mempengaruhi erosi gigi adalah lama bergabung di UKM Renang ( $p= 0,030$ ), frekuensi berenang ( $p= 0,014$ ), dan durasi berenang ( $p= 0,034$ ). Dan variabel yang mempengaruhi iritasi kulit yaitu sisa klor ( $p= 0,046$ ), frekuensi berenang ( $p= 0,043$ ), dan durasi berenang ( $p= 0,049$ ).

Disimpulkan jika faktor yang mempengaruhi erosi gigi adalah lama bergabung di UKM Renang, frekuensi berenang, durasi berenang. Faktor yang mempengaruhi iritasi kulit adalah kadar sisa klor, frekuensi berenang, dan durasi berenang. Disarankan pihak kolam renang untuk melakukan pemantauan kualitas air kolam renang, mengurangi dosis takaran klorin, dan untuk anggota UKM Renang UNESA agar memakai baju renang yang tertutup serta memakai krim pelembab sebelum berenang.

Keywords : erosi gigi, iritasi kulit, kadar sisa klor, kualitas air kolam renang