

# Ultraviolet Radiation Exposure of Children and Adolescents in Durban, South Africa<sup>¶</sup>

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## Abstract

The solar ultraviolet radiation (UVR) exposure of 30 children and adolescents in three age groups (4–6 years, 7–9 years and 13–14 years) was measured for 1 week in late summer (February–March) in Durban, South Africa, using UVR-sensitive polysulfone film badges (PSFB) attached to the lapel region of the body. The mean and median values for all ages over the study period were 2.0 and 1.2 standard erythemal dose (SED) units, respectively, where 1 SED = 100 J·m<sup>-2</sup>. Individual PSFB doses were analyzed as a function of age, gender and behavior. No significant statistical differences were found between different age groups; however, there was a statistical difference between males and females, with males generally receiving higher PSFB doses. Subjects completed UVR exposure journals documenting their time outdoors, shade *versus* sun conditions, nature of their activities, clothing worn and their use of sunscreen for each day of the study. Activity patterns were noted as the most important factor influencing individual UVR dose. Ambient erythemal UVR was measured by a Yankee Environmental Systems UVB pyranometer, and a relationship between ambient UVR and individual UVR dose was derived. On average, subjects received a dose of 4.6% of the total daily erythemal UVR. Based on this factor, the potential dose of an individual over a full annual cycle was estimated. Accordingly, there were 139 days during the year when an individual with skin type I (light skin) would be likely to experience minimal erythema and 97 and 32 days for individuals with skin types II and III, respectively.

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