

ABSTRACT

An Investigation of the Incidence of Idiopathic Scoliosis in Trinidad and Tobago Using Moire' Topography

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The incidence of idiopathic scoliosis in children in the age group 8 - 15 years inclusive has been evaluated using the non-invasive method of moire' topography. Owing to the ambiguity of the aetiology of idiopathic scoliosis, a screening programme should be an integral part of primary health care and clinical management, forestalling the progression of spinal deformity and associated rib-cage rotation among the sensitive part of the population.

The grating-shadow method of moire' topography was adopted because of its simplicity, safety, low cost and the ease of evaluation and documentation which it offers. The patient's back is covered with opaque white base cream SCRC01 and positioned in proximity to the physical grating. The base cream was specified by a

colorimetric analysis of its reflectance in order to determine its location in colour space. It was located close to the white point in the CIE chromaticity diagram at co-ordinates (0.340, 0.349, 0.312). This cream, which has been patented, was developed in order to mask the variation in skin tones of the patients and effectively standardize the background. In so doing, the level of contrast of the moiré fringes against the background was enhanced for photographic recording. The overlapping of the lines of the physical grating with its shadow on the back surface produced the fringe pattern observed in the plane of the grating. Analysis of the moiré topogram with the necessary perspective corrections facilitated three - dimensional reconstruction of the patient's back shape for analysis.

To date 2035 children have been screened in this programme. Of this population 0.2% were found to exhibit scoliosis after secondary screening at the Princess Elizabeth Orthopaedic Centre, Port of Spain, Trinidad. The scoliotic population of the Princess Elizabeth Centre showed a ratio of girls to boys of 4 : 1 with the mean age of 14.0 years for females and 14.5 years for males. It was found that the growth rates for scoliotic males as compared to males in the general population were 6.80 ± 0.37 cm/yr and 5.60 ± 0.13 cm/yr respectively while those for scoliotic females and females in the general population were respectively 5.05 ± 0.58 cm/yr and 4.60 ± 0.23 cm/yr. Furthermore, in the early eighties approximately 7.5%

of scoliotic females and 15% of scoliotic males had an accompanying leg length discrepancy of 1.0 cm - 2.0 cm, however, toward the end of the decade, the period 1989 - 1991 this percentage had increased to 29.9% for the females and 31.3% for the males. Further evaluation was also performed with respect to place of origin and trends in the type of treatment prescribed.

The grating-TV method, which is a logical progression from the grating-shadow method offers the advantages of rapid data storage and graphical manipulation. This method also facilitates the introduction of a computerised system which caters to visual postural rehabilitation. This system is suitable for use by individuals exhibiting various orthopaedic disabilities.

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