

Idiopathic Scoliosis Etiology Remains Understudied

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1. Literature Review

When discussing, What's Important: Moving Beyond "Idiopathic" in Adolescent Idiopathic Scoliosis, answers to etiology are not beyond our reach however more research is needed. Etiology of idiopathic scoliosis (IS) is indeed among the lesser-studied elements of research topics of idiopathic scoliosis. A review of 2,974 English-language publications relating to scoliosis research from 2010 to 2019 noted that when compared to evaluation, management, bracing and surgery, etiology research has been much under-studied (unpublished data). Results of this review by subheading area of research are shown in (Figure 1). Of the 2,974 AIS related publications, only 420, or 14%, were etiopathogenesis while in contrast, 1073, or 36%, were surgery papers.

The study of etiology of IS remains important at this time as the topic is indeed under much debate. Though AIS etiology remains not clearly known progress in some aspects of etiopathogenesis has been seen [1-4]. The timing to intensify study on etiology is now more appropriate in that previously siloed and fragmented disciplines seemingly unrelated are increasingly coming together for cross disciplinary discussions. As we have noted [5], there is need for further cross discipline discussions to clarify and understand this condition in otherwise previously completely healthy teens and pre-teens. A greater understanding of the etiology of condition from a broad perspective [6] will advance our current abilities to treat it. We can evolve from aggressive (and quality of life saving) surgical treatment of severe cases to more directly treating the underlying causes and inherent features of the condition itself. Interdisciplinary collaboration to integrate related (growth, musculoskeletal immaturity, inherent features, bone health, normal development, genetics) -- and seemingly unrelated (biomechanics, anthropology, engineering) -- fields is needed [7,8]. There were a total of 2,974 publications, of which 36% (1073) were surgery papers and only 14% (420) were etiopathogenesis

papers. The total number of etiology papers are a culmination from the following categories: genetics, body composition, biomechanical and balance, central nervous system, bone metabolism, animal model, melatonin-related and muscle-related. A large percentage of publications in the field are contributed by relatively few centers.

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