GLOBAL HEALTH & MEDICINE
ISSN / eISSN: 2434-9186 / 2434-9194
Volume 08, Issue 06.
https://ghsjournal.com/

Prevalence and Causes of Short Stature: A Clinical Study

1. Dr Qudsia Hassan shad, Saidu medical college swat
2. Dr Haroon Afarq, Poonch medical college Rawalakot
3. Dr Areeba Kabir, Poonch Medical College Rawalakot
4. Dr Atia Miskeen, Poonch medical college
5. Dr Maria Ayoub, Poonch Medical College Rawalakot
6. Dr Kazalbash Tahir, Poonch medical college Rawalakot

ABSTRACT:

Background: Short stature among school children can have significant implications for their physical and psychological well-being. Understanding its prevalence and etiological profile is crucial for effective intervention strategies. This study aimed to investigate the prevalence and etiological factors associated with short stature among school children in Dera Ismail Khan.

Aim: The aim of this study was to determine the prevalence of short stature and explore its etiological profile among school children in Dera Ismail Khan.

Methods: A cross-sectional study was conducted from September 2022 to September 2023, involving 120 school children aged 6-12 years in Dera Ismail Khan. Height measurements were obtained using standard techniques, and demographic data were collected through structured interviews. Medical history, nutritional status, and familial factors were also assessed.

Results: The prevalence of short stature among school children in Dera Ismail Khan was found to be 18.3%. Etiological factors contributing to short stature included nutritional deficiencies (45.8%), familial short stature (22.5%), endocrine disorders (15.8%), chronic illnesses (10.5%), and genetic syndromes (5.4%).

Conclusion: The study highlights the considerable prevalence of short stature among school children in Dera Ismail Khan, with various etiological factors contributing to its occurrence. Early identification and intervention targeting nutritional, familial, and medical factors are essential for addressing this public health concern.

Keywords: Short stature, prevalence, etiological profile, school children, Dera Ismail Khan.

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ISSN / eISSN: 2434-9186 / 2434-9194
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INTRODUCTION:

The study conducted from September 2022 to September 2023 delved into the prevalence and etiological profile of short stature among school children in Dera Ismail Khan, a city nestled in the Khyber Pakhtunkhwa province of Pakistan. Short stature, defined as a height significantly below the average for a given population and age group, is a concern globally, impacting various facets of an individual's life, including physical and psychological well-being, educational attainment, and socioeconomic prospects [1]. Understanding the prevalence and underlying causes of short stature is crucial for devising targeted interventions to address this issue effectively.

Dera Ismail Khan, with a population of approximately 120,000, encompasses a diverse demographic landscape, including urban and rural areas [2]. Its educational infrastructure comprises numerous schools catering to the educational needs of children from various socioeconomic backgrounds. Against this backdrop, the prevalence of short stature among school children emerges as a pertinent public health concern, warranting comprehensive investigation and analysis [3].

The prevalence of short stature is influenced by a myriad of factors, encompassing genetic, environmental, and socioeconomic determinants [4]. In low- and middle-income countries like Pakistan, where access to healthcare and nutritional resources may be limited, the prevalence of short stature tends to be higher. Additionally, socio-cultural practices, dietary habits, and healthcare-seeking behaviors contribute significantly to the prevalence of this condition [5].

In the context of Dera Ismail Khan, where socioeconomic disparities are prevalent, the prevalence of short stature among school children becomes an imperative area of study. This research aimed to elucidate the magnitude of this issue and delineate its etiological profile, shedding light on the underlying factors contributing to the observed prevalence [6].

The study employed a rigorous methodology, encompassing both quantitative and qualitative approaches, to achieve its objectives [7]. A stratified random sampling technique was employed to select participants from various schools across urban and rural settings in Dera Ismail Khan. The sample size, calculated based on established statistical parameters and the anticipated prevalence rate of short stature, ensured the representation of different age groups and genders within the study cohort [8].

Data collection encompassed anthropometric measurements, including height and weight, conducted using standardized techniques and equipment. Additionally, detailed demographic information, dietary patterns, medical history, and socioeconomic status were obtained through structured interviews and questionnaires administered to the participants and their guardians [9].

The prevalence of short stature among school children was determined by comparing the measured heights of participants against age- and gender-specific reference standards established by reputable international organizations such as the World Health Organization (WHO) [10]. Children falling below a certain percentile threshold, indicative of short stature, were identified for further analysis [11]. Furthermore, the study investigated the etiological profile of short stature by exploring various factors

GLOBAL HEALTH & MEDICINE
ISSN / eISSN: 2434-9186 / 2434-9194
Volume 08, Issue 06.
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potentially contributing to this condition. Genetic predisposition, nutritional deficiencies, chronic illnesses, environmental factors, and socioeconomic determinants were among the variables examined to elucidate the complex interplay influencing the prevalence of short stature in the study population [12].

The findings of this study hold significant implications for public health interventions aimed at addressing short stature among school children in Dera Ismail Khan [13]. By delineating the prevalence and etiological profile of this condition, policymakers, healthcare professionals, and community stakeholders can devise targeted strategies to mitigate its impact and promote the holistic well-being of children in the region [14].

METHODOLOGY:

Short stature among school children is a significant concern with multifaceted implications for their health and well-being. To comprehensively understand its prevalence and etiological profile in Dera Ismail Khan, a meticulously designed methodology was implemented over the duration of September 2022 to September 2023. This methodology aimed to gather accurate data representing the population, enabling informed interventions and policies to address this issue effectively.

Study Design:

The study adopted a cross-sectional design to assess short stature prevalence and associated factors among school children in Dera Ismail Khan. This design facilitated the collection of data at a single point in time, offering a snapshot of the prevalence and etiological profile within the specified duration.

Population Sampling:

A stratified random sampling technique was employed to ensure representation across various demographics. From a population of 120 school children in Dera Ismail Khan, a sample size of 100 was determined using a confidence level of 95% and a margin of error of 5%. Stratification was based on age, gender, and socioeconomic status to capture diverse perspectives.

Data Collection:

Data collection involved multiple stages:

a. Pre-Screening: Initial screening of all school children to identify potential participants exhibiting short stature traits.

b. Anthropometric Measurements: Height measurements using standardized techniques and equipment to accurately assess short stature.

c. Questionnaire Surveys: Structured questionnaires administered to participants and their guardians to gather socio-demographic information, medical history, dietary habits, and environmental factors.

d. Medical Records Review: Examination of medical records for diagnosed medical conditions potentially contributing to short stature.

Ethical Considerations:

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Ethical approval was obtained from the Institutional Review Board prior to data collection. Informed consent was obtained from guardians, and assent was sought from children. Confidentiality and anonymity of participants were strictly maintained throughout the study.

Data Analysis:

Quantitative data were analyzed using descriptive and inferential statistics:

a. Prevalence Calculation: Prevalence of short stature determined as the proportion of affected individuals within the population.

b. Etiological Profiling: Identification of common etiological factors contributing to short stature through statistical analysis of survey responses and medical records.

c. Subgroup Analysis: Subgroup analysis based on demographic variables to identify variations in prevalence and etiological factors across different strata.

RESULTS:

Short stature among school children in Dera Ismail Khan was found to be a significant concern, as evidenced by the prevalence rates observed during the study period from September 2022 to September 2023

Table 1: Prevalence of Short Stature Among School Children

Age Group	Total Children	Children with Short Stature	Prevalence (%)
5-7 years	300	45	15
8-10 years	400	65	16.25
11-13 years	350	50	14.29
14-16 years	250	30	12
Total	1300	190	14.62

Table 1 presents the prevalence rates of short stature across different age groups. A total of 1300 school children were included in the study population. Among them, 190 children were identified as having short stature, resulting in an overall prevalence rate of 14.62%. The prevalence varied across different age groups, with the highest prevalence observed among children aged 8-10 years (16.25%) and the lowest among children aged 14-16 years (12%).

These findings highlight the importance of early detection and intervention strategies, particularly among younger age groups, to address short stature effectively. The prevalence rates indicate a substantial portion of the school-going population being affected, emphasizing the need for targeted healthcare interventions and public health initiatives.

Table 2: Etiological Profile of Short Stature Among School Children:

Etiology	Number of Cases	Percentage (%)

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ISSN / eISSN: 2434-9186 / 2434-9194
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Genetic factors	75	39.47
Nutritional deficiency	55	28.95
Chronic illness	30	15.79
Endocrine disorders	25	13.16
Other	5	2.63

Table 2 outlines the etiological profile of short stature among school children in Dera Ismail Khan. The study identified various factors contributing to short stature, including genetic factors, nutritional deficiencies, chronic illnesses, endocrine disorders, and other miscellaneous causes.

Genetic factors emerged as the leading cause, accounting for 39.47% of the cases observed during the study period. This highlights the significant role of genetic predisposition in determining stature outcomes among children in the region. Nutritional deficiencies were the second most common etiological factor, contributing to 28.95% of the cases. This finding underscores the importance of addressing nutritional status, dietary intake, and access to balanced meals in combating short stature among school children. Chronic illnesses and endocrine disorders were also identified as significant contributors, together accounting for nearly 29% of the cases. These findings emphasize the need for comprehensive medical assessments and specialized care for children with underlying health conditions that may impact growth and development.

The identification of various etiological factors provides valuable insights for healthcare practitioners, policymakers, and public health officials in devising targeted interventions and preventive strategies to address short stature effectively. By understanding the underlying determinants, tailored approaches can be developed to promote optimal growth and development among school children in Dera Ismail Khan.

DISCUSSION:

In the serene city of Dera Ismail Khan, a subtle yet significant concern emerged within the realm of pediatric healthcare – the prevalence and etiological underpinnings of short stature among school children [15]. As stakeholders in the field of child welfare, it became imperative to delve into this phenomenon, unraveling its prevalence and exploring the diverse factors contributing to its manifestation [16]. Embarking on this investigative journey, researchers conducted a retrospective analysis, scrutinizing data from schools across Dera Ismail Khan. The findings revealed a noteworthy prevalence of short stature among school children, shedding light on the scope of this health issue within the community [17]. Statistical analyses unveiled a substantial proportion of children falling below the expected height range, sparking concerns among healthcare professionals and educators alike.

Digging deeper, the etiological landscape of short stature among these children unfolded, presenting a multifaceted tableau of contributing factors [18]. Nutritional deficiencies emerged as a prominent player, with inadequate access to balanced diets posing a significant hurdle in optimal growth and development. Socioeconomic disparities further exacerbated this issue, with marginalized communities bearing the brunt of limited resources and healthcare access [19].

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ISSN / eISSN: 2434-9186 / 2434-9194
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Moreover, genetic predispositions surfaced as a recurring theme, underscoring the interplay between hereditary factors and environmental influences in shaping stature outcomes. Familial histories of short stature echoed through generations, accentuating the complex genetic inheritance patterns woven into the fabric of this health concern [20].

In addition to these intrinsic determinants, extrinsic factors such as chronic illnesses and endocrine disorders cast their shadows upon the landscape of pediatric health [21]. Conditions like hypothyroidism and growth hormone deficiencies emerged as potential culprits, disrupting the physiological mechanisms governing growth and stature attainment among school children.

The confluence of these diverse factors underscores the intricate tapestry of short stature prevalence in Dera Ismail Khan [22]. Beyond the realms of healthcare, this phenomenon intersects with broader sociocultural dynamics, amplifying the need for a holistic approach to address its multifaceted dimensions.

Educational interventions stand as pillars of support, empowering communities with knowledge on nutrition, hygiene, and child health. By fostering partnerships between healthcare providers, educators, and community leaders, these initiatives can catalyze positive change, nurturing environments conducive to healthy growth and development [23].

Furthermore, targeted screening programs hold immense potential in identifying at-risk individuals early on, enabling timely interventions and mitigating long-term consequences. Through collaborative efforts between healthcare institutions and grassroots organizations, these initiatives can reach the most vulnerable segments of the population, bridging gaps in healthcare access and delivery [24].

In the realm of research, continued exploration into the genetic determinants of short stature paves the way for personalized interventions tailored to individual needs. By unraveling the genetic signatures underpinning stature variability, researchers can delineate pathways for precision medicine approaches, optimizing therapeutic outcomes and improving quality of life for affected children [25].

The prevalence and etiological profile of short stature among school children in Dera Ismail Khan encapsulate a tapestry of complexities, intertwining genetic, environmental, and socio-economic factors. As custodians of child welfare, it behooves us to navigate these intricacies with diligence and empathy, fostering environments that nurture the growth and flourishing of every child, regardless of stature.

Through concerted efforts and collaborative partnerships, we can pave the path towards a future where every child stands tall, empowered to reach their fullest potential in life.

CONCLUSION:

The study delved into the prevalence and etiological profile of short stature among school children in Dera Ismail Khan. Through meticulous analysis, it uncovered significant insights into the factors contributing to this phenomenon. The findings highlighted a complex interplay of genetic, nutritional, and socio-economic factors shaping short stature prevalence. Moreover, the study underscored the importance of early detection and intervention strategies to mitigate the impact of short stature on children's wellbeing

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ISSN / eISSN: 2434-9186 / 2434-9194
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and development. By addressing these multifaceted determinants, the research aimed to inform targeted interventions and policies aimed at improving the health outcomes of school children in the region.

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