How to Cite:
Padmavathi, P., Sathiyapriya, V., Jos, P., & Sudha, V. (2022). Prevalence of premature canities among college students studying in a private medical college, Chennai: A cross sectional study. *International Journal of Health Sciences*, *6*(S6), 6576–6582. https://doi.org/10.53730/ijhs.v6nS6.11182

Prevalence of premature canities among college students studying in a private medical college, Chennai: A cross sectional study

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Abstract---Introduction: Canities is a scientific term used to describe the graying of hair. The graying of hair varies with age and ethnicity. Aging of hair occurs due to reduced melanin synthesis by the pigment producing cell melanocytes. Premature canities are becoming increasingly common. However, the etiology of premature canities remains unknown. Hence this study aimed to determine the prevalence of premature canities and its association with family history. Materials and methods: This cross-sectional study was conducted in the Department of Biochemistry of the students studying in ACS Medical College and Hospital from June 2018 to June 2019. Students aged less than 25 years participated in this present study. Results: Totally 519 volunteers 179 subjects had premature canities. The prevalence of Premature canities was 34.5%. It was more prevalent among females (n=97) 54% compared to males (n=82) 46%. Early onset of hair graying occurred in subjects with family history of gray hair. Among them 49 % of the subjects had family history of premature canities predominantly maternal family history (33%). The onset of premature hair graying occurred even before the age of 13 years and maximum percentage occurred at the age range of 16-18

years. Discussion and conclusion: Our study shows the prevalence of premature canities was more prevalent in students especially in higher secondary age group. Studies says that stress can cause premature canities. Canities is also a risk factor of coronary artery disease. It's also important for parents to understand that the graying of hair is not the common aging process in adolescent age group. It requires medical attention and life style modifications.

Keywords---premature canities, prevalence, college students, family history.

Introduction

Hair and its pigmentation have important role in beauty and self-confidence. Canities is a scientific term used to describe the graying of hair [1]. The graying of hair varies with age and ethnicity. Appearance of gray hair is the physiological visible ageing process [2]. However premature canities refers to occurrence of gray hair before the age of 20 years in Whites, 30 years in African's and 25 years in Asians [3]. Premature canities lowers the self-confident and communication and also act as a predictor of systematic diseases [4,5]. Aging of hair related to depigmentation of the hair due to reduced melanin synthesis by melanocytes the pigment producing cells [6]. Premature canities is a more common, under evaluated clinical issue and less focused in Indian scenario [1]. It is well known that premature canities related to autoimmune diseases and premature ageing syndrome. But the etiology of premature canities without any autoimmune disease is unknown [7]. Hence the aim of the present study is to (i) determine the prevalence and associated factors of premature canities.

Materials and Methods

This is a cross sectional study conducted in the department of biochemistry of the students studying in ACS Medical College & Hospital, Chennai, India from June 2018 to June 2019. The age cut off for premature canities in our study population is < 25 years. Exclusion criteria: Subjects with autoimmune diseases like skin pigmentation syndrome and premature aging syndromes like Werner's syndrome, vitiligo are excluded from this study. Inclusion criteria: less than 25 years aged healthy volunteers. Ethical clearance was obtained from institutional ethics committee. Totally 519 volunteers participated in this present study. Among them 340 were controls i.e., subjects without premature canities, and 179 were cases i.e., subjects with premature canities. After obtaining informed consent the following data's were documented which includes name, age, sex, presence of gray hair, age of onset of gray hair, family history of premature hair graying. Statistical analysis: The statistical analysis was done using SPSS Version 20. The data were expressed as the mean and standard deviation (SD). Categorical data were expressed as percentages. The $P < 0.05$ was considered as statistically significant.

Results

The prevalence of premature canities was 34.5% in our studied population. We also found that the prevalence of premature canities is more in females (n=97) 54% compared to males (n=82) 46% which is shown in Figure 1. The mean age of the subjects with premature gray hair between female and male was (18.68 ± 0.98 and 19.22 ±1.49). Figure 2 shows the age of onset of gray hair. In our study 6.1% of males and 10.3 % of female were noticed their first gray hair around the age of 13 years. The highest number of gray hairs in males 34.1% and females 43.3% was first found in between the age of 16 to 18 years. The Socio clinical characteristics of the studied population was shown in Table1. In our study population we found (n=179) had gray hair among them 98% of their family had premature canities. We found that among the cases family history of gray hair was found greater number in relation with mother (33%) than the father (28%) and followed by siblings (24%) and grandparents (15%). We also found that family history of gray hair significantly ($P<0.01$) correlates with the age of cases in our study population which is shown in Figure 3.

Discussion and Conclusion

In our study the prevalence of premature canities was 34.5% . However, the study done by Saad et al shows the prevalence of premature hair graying was 31.2%. In our study 43% of the subjects first noticed the gray hair between the age of 16-18 years which is also agreed by Saad et al [8]. We found that the mean age of premature canities was 18.68 ± 0.98 and 19.22 ±1.49 in females and males. Which is also similar to the study done by Bhat et al [3]. The adelucent age group is the most crucial time period because of selection of career path and hormonal changes in their body [9] in this situation premature canities may also lead to cause psyco social issues [1]. The production of endogenous oxidative stress (H_2O_2) during melanogenesis can disturb the maintenance of melanocyte stem cells in hair follicles and eventually turn hair to gray colour [6,10]. Due to hormonal changes and pre pressure causes additional oxidative stress which can also accelerate the hair graying process [11, 12].

The accumulation of intracellular oxidative stress is the evidence for the mechanism of hair graying [13]. In the present study the females were more affected than males. This could be due to increased number of females compared to males. Which is also agreed by Saad et al [8]. But according to a study done by Sharma et al the prevalence was more among males compared to females [4] Tobin et al described the role of genetics in premature canities. It is inherited as an autosomal dominant trait [13] this means that either parents, siblings or grand parents have the history of premature canities [1]. In our present study majority of the cases had the family history of premature canities especially maternal history. Our study revealed family history has the major role causing of premature canities. Premature canities reflects biological aging. It creates social stigma and poor self-confident. Studies says that stress can also cause premature canities. Canities is a risk factor of coronary artery disease. It's also important for parents to understand that the graying of hair is not the common aging process in adolescent age group. It requires medical attention and life style modifications.

Conflict of interest

The authors declare that there is no conflict of interests regarding the publication of this manuscript.

References

1. Altan Kocaman S, Çetin M, Emre Durakoğlugil M, Çanga A, Çiçek Y, Doğan S, et al. The degree of premature hair graying as an independent risk marker for coronary artery disease: a predictor of biological age rather than chronological age. Anatol J Cardiol [Internet]. 2012;12(6):457–63. Available from: https://dx.doi.org/10.5152/akd.2012.150
2. Altan Kocaman S, Çetin M, Emre Durakoğlugil M, Çanga A, Çiçek Y, Doğan S, et al. The degree of premature hair graying as an independent risk marker for coronary artery disease: a predictor of biological age rather than chronological age. Anatol J Cardiol [Internet]. 2012;12(6):457–63. Available from: https://dx.doi.org/10.5152/akd.2012.150
3. Anggraini DR, Feriyawati L, Hidayat H, Wahyuni AS. Risk factors associated with premature hair greying of young adult. Open Access Maced J Med Sci. 2019;7(22):3762–4.
4. Anggraini DR, Feriyawati L, Hidayat H, Wahyuni AS. Risk factors associated with premature hair greying of young adult. Open Access Maced J Med Sci. 2019;7(22):3762–4.
5. Bhat R, Sharma R, Pinto A, Dandekeri S, et al. Epidemiological and investigative study of premature graying of hair in higher secondary and pre-university school children. Int J Trichology. 2013;5(1):17–21.
6. Bhat R, Sharma R, Pinto A, Dandekeri S, et al. Epidemiological and investigative study of premature graying of hair in higher secondary and pre-university school children. Int J Trichology. 2013;5(1):17–21.
7. Carrier A. Metabolic Syndrome and Oxidative Stress: A Complex Relationship. Vol. 26, Antioxidants & redox signaling. United States; 2017. p. 429–31.
8. Carrier A. Metabolic Syndrome and Oxidative Stress: A Complex Relationship. Vol. 26, Antioxidants & redox signaling. United States; 2017. p. 429–31.
9. Chakrabarty S, Krishnappa PG, Gowda DG, Hiremath J. Factors Associated with Premature Hair Graying in a Young Indian Population. Int J Trichology. 2016;8(1):11–4.
10. Chakrabarty S, Krishnappa PG, Gowda DG, Hiremath J. Factors Associated with Premature Hair Graying in a Young Indian Population. Int J Trichology. 2016;8(1):11–4.
11. Commo S, Gaillard O, Bernard BA. Human hair greying is linked to a specific depletion of hair follicle melanocytes affecting both the bulb and the outer root sheath. Br J Dermatol. 2004 Mar;150(3):435–43.
12. Commo S, Gaillard O, Bernard BA. Human hair greying is linked to a specific depletion of hair follicle melanocytes affecting both the bulb and the outer root sheath. Br J Dermatol. 2004 Mar;150(3):435–43.
13. Daulatabad D, Singal A, Grover C, Chhillar N. Profile of Indian patients with premature canities. Indian J Dermatol Venereol Leprol. 2016;82(2):169–72.
14. Daulatabad D, Singal A, Grover C, Chhillar N. Profile of Indian patients with premature canities. Indian J Dermatol Venereol Leprol. 2016;82(2):169–72.

15. Ermatov, N., Bobomuratov, T., & Sagdullaeva, M. (2022). Prolonged newborns and prolong pregnancy: A modern view on the problem. International Journal of Health & Medical Sciences, 5(1), 26-30. https://doi.org/10.21744/ijhms.v5n1.1829
16. Pandhi D, Khanna D. Premature graying of hair. Indian J Dermatology, Venereol Leprol [Internet]. 2013;79(5):641. Available from: http://www.ijdvl.com/text.asp?2013/79/5/641/116733
17. Pandhi D, Khanna D. Premature graying of hair. Indian J Dermatology, Venereol Leprol [Internet]. 2013;79(5):641. Available from: http://www.ijdvl.com/text.asp?2013/79/5/641/116733
18. Peters EMJ, Imfeld D, Gräub R. Graying of the human hair follicle. J Cosmet Sci. 2011;62(2):121–5.
19. Peters EMJ, Imfeld D, Gräub R. Graying of the human hair follicle. J Cosmet Sci. 2011;62(2):121–5.
20. Romeo, Russell D. The teenage brain: The stress response and the adolescent brain. Curr Dir Psychol Sci. 2013;22(2):140–5.
21. Romeo, Russell D. The teenage brain: The stress response and the adolescent brain. Curr Dir Psychol Sci. 2013;22(2):140–5.
22. Saad M, Babar NF, Majeed R, Rehman AU, Khan OA, Chatha DE, et al. Impact of Premature Greying of Hair on Socio-cultural Adjustment and Self-esteem among Medical Undergraduates in Foundation University, Islamabad. Cureus. 2019;11(7).
23. Saad M, Babar NF, Majeed R, Rehman AU, Khan OA, Chatha DE, et al. Impact of Premature Greying of Hair on Socio-cultural Adjustment and Self-esteem among Medical Undergraduates in Foundation University, Islamabad. Cureus. 2019;11(7).
24. Sharma N, Dogra D. Association of Epidemiological and Biochemical Factors with Premature Graying of Hair: A Case-Control Study. Int J Trichology. 2018;10(5):211–7
25. Sharma N, Dogra D. Association of Epidemiological and Biochemical Factors with Premature Graying of Hair: A Case-Control Study. Int J Trichology. 2018;10(5):211–7.
26. Spahis S, Borys J-M, Levy E. Metabolic Syndrome as a Multifaceted Risk Factor for Oxidative Stress. Antioxid Redox Signal. 2017 Mar;26(9):445–61.
27. Spahis S, Borys J-M, Levy E. Metabolic Syndrome as a Multifaceted Risk Factor for Oxidative Stress. Antioxid Redox Signal. 2017 Mar;26(9):445–61.
28. Suryasa, I. W., Rodríguez-Gámez, M., & Koldoris, T. (2021). Get vaccinated when it is your turn and follow the local guidelines. International Journal of Health Sciences, 5(3), x-xv. https://doi.org/10.53730/ijhs.v5n3.2938
29. Tobin DJ, Paus R. Graying: Gerontobiology of the hair follicle pigmentary unit. Exp Gerontol. 2001;36(1):29–54.
30. Tobin DJ, Paus R. Graying: Gerontobiology of the hair follicle pigmentary unit. Exp Gerontol. 2001;36(1):29–54.

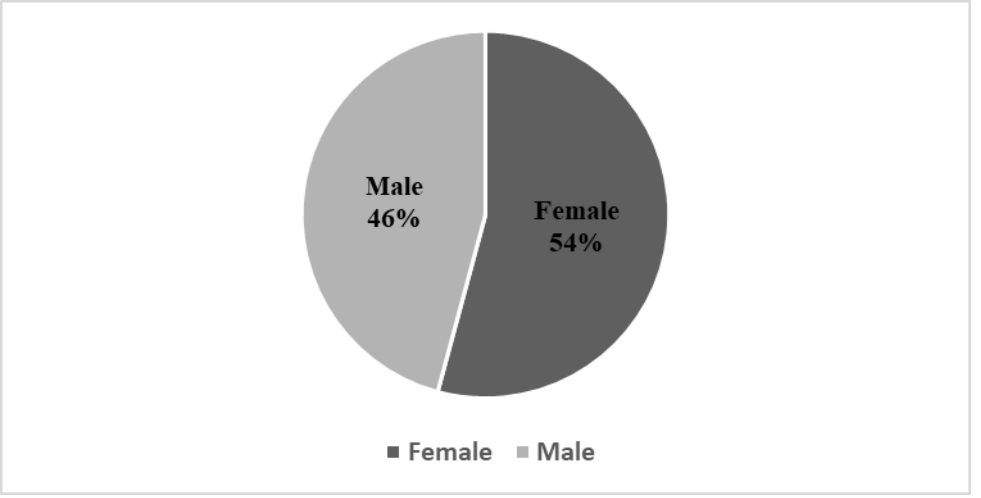

Figure 1. Prevalence of premature canities

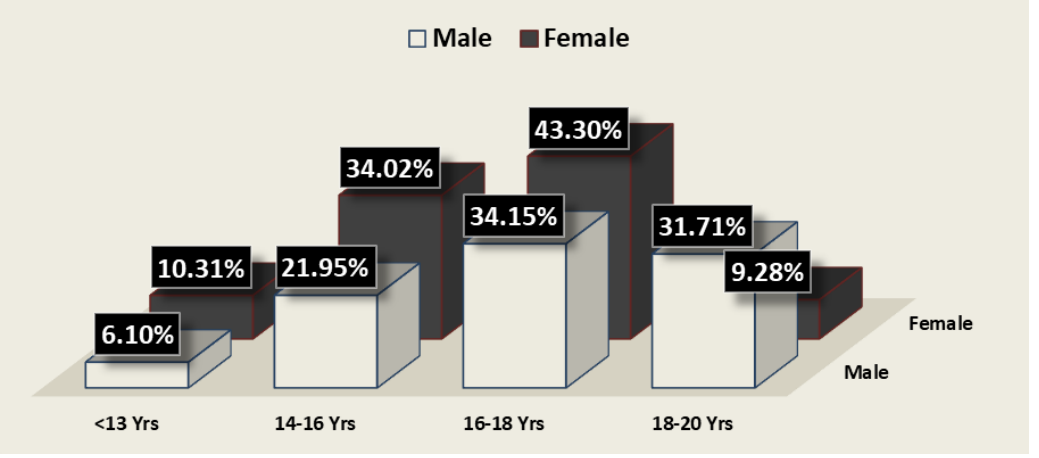

Figure 2. Age at first noticed presence of gray hair

Table 1
Socio clinical characteristics of studied population

Parameters	With premature canities (n=179)	Without premature canities (n=340)
Age (mean ± SD)	18.93 ± 1.25	18.92 ± 0.90
Male (n / %)	82 / 46	116 / 34
Female (n / %)	97 / 54	224 / 66
Family history of gray hair (n / %)	88 / 49	64 / 18
Number of gray hairs <10 (n / %)	105 / 58.6	NA

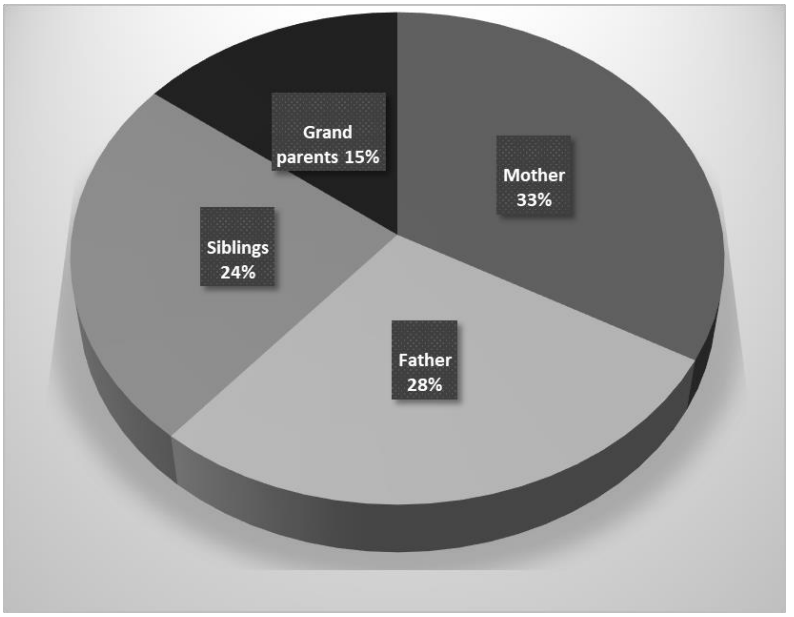

Figure 3. Family history of premature canities