Sir,

Hair is an important asset for external appearance and personality. Healthy hair looks clean, soft to feel, shiny, untangled, has no frizz, and is bouncy when shaking the head. To have this, you require not only a good overall health and freedom from disease but also a daily chore of maintenance and grooming of hair.[1] Shampoos and conditioners of today target some of the factors responsible for helping the hair look healthy through their various ingredients.[2]

Hair care and styling have gained a lot of importance in recent years, especially among teenagers. It has been seen that modern-day styling methods and the use of different hair care products have resulted in hair loss and also cause hair damage.[1,2] The process of chipping of the hair cuticle, which results from abrasion of hair due to grooming devices or chemicals, is a major factor in hair damage.[2]

Maintenance of hair is a daily routine for many, and it is common to see people investing a huge amount of time and money on hair care which has led to a huge industry producing and selling a multitude of hair care products to fulfill these demands. India too is undergoing a hair revolution with markets flooded with products promising instant beautification of hair. The practice of hair care is essentially based on the knowledge and attributes regarding the hair structure and physiology of hair. Student knowledge, attitude, and practices (KAP) study is important because they are susceptible to health education and change of behavior.[10] In the absence of KAP study regarding hair care, we decided to undertake such study by taking final year medical students as cohort and compared these data with their counterparts, i.e. final year engineering students, so as to assess the impact of hair-related knowledge during undergraduate medical training. In this cross-sectional study, a detailed questionnaire which included various open-ended, semi-open-ended, and close-ended questions covering various aspects of hair care was prepared and validated by five dermatologists, regarding hair care KAP. After the institutional ethics committee clearance, this questionnaire was administered to students of one batch of final year medical and final year engineering students and collected back on the same day. The data were analyzed. A KAP score for each KAP variable was defined as percentage of respondents who gave appropriate response. Response in both the groups was compared and analyzed statistically by Chi-square test/Fisher exact test. IBM SPSS Statistics for Windows, version 24 (IBM Corp., Armonk, N.Y., USA) was used for the statistical analysis.

A total number of 98 males and 62 females were studied, the mean age of study population being 20.83 years ± 1.093 standard deviation, of these 48 male medical students (mean age of 21.24 years) and 32 female medical students (mean age of 20.03 years) were designated as Group A and 50 males (mean age of 20.53) and 30 female engineering students (mean age of 19.93) were designated as Group B. Analysis revealed major differences among the two groups.

Some interesting differences about KAP of hair were observed. A total of four questions were studied regarding the knowledge of hair care [Table 1] Hundred percent of the medical students felt that diet has relation with hair versus 87.5% of the engineering students. A fair number of medical students (81.25%) thought that certain medications taken orally or as injections can cause hair fall as compared to 45% of their engineering counterparts. Nearly, an equal number of medical (60%) and engineering (50%) students felt that graying of hair is usually because of nutritional deficiency, followed by the attribution of graying to a hereditary component in 27.5% of the medical and 25% of the engineering students. The traditional trend of the use of shikakai for hair loss was extremely less in both medical (83.75%) and engineering (87.50%) students’ groups. Regarding the knowledge of what type of effect does conditioner has on hair, a fair number of medical students (85%) felt that it moisturizes the hair as compared to 65% of the engineering students. Interestingly, 22.5% of the engineering students felt that it provides cleaning effect in and 12.5% of the same engineering group felt that it provided nutritive effect.

A total of 13 questions were asked in relation to attitude regarding hair care, as depicted in Table 2. A great
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Table 1: Depicting knowledge regarding hair care practices among medical and engineering students

| Questions                                                                 | Options               | Medical students (%) | Engineering students (%) |
|---------------------------------------------------------------------------|-----------------------|----------------------|--------------------------|
| 1. Do you think that diet has any relation with hair?                     | Yes                   | 100                  | 87.50                    |
|                                                                           | No                    | -                    | 2.50                     |
|                                                                           | Not sure              | -                    | 8.75                     |
| 2. Do you think that certain medications taken orally or injections can cause hair fall? | Yes                   | 81.25                | 45                       |
|                                                                           | No                    | 0                    | 28.75                    |
|                                                                           | Not sure              | 18.75                | 26.25                    |
| 3. Graying of hair is usually because of                                   | Nutritional deficiency| 60                   | 50                       |
|                                                                           | Smoking               | 3.75                 | 11.25                    |
|                                                                           | Hormonal imbalance    | 13.75                | 31.25                    |
|                                                                           | Hereditary            | 27.50                | 25                       |
| 4. What type of effect does conditioner has on your hair?                  | Cleaning effect       | 8                    | 22.50                    |
|                                                                           | Moisturizing effect   | 85                   | 65                       |
|                                                                           | Nutritive effect      | 0                    | 12.50                    |
|                                                                           | Don't know            | 7                    | 0                        |

number of medical students (67.5%) were not satisfied with their hair compared to 55% of the engineering students. A vast majority of both medical (93.75%) and engineering (75.5%) students felt that sharing of towels could transfer dandruff from one person to another. About 32.5% of the medical students dry their hair naturally compared to 12.5% of the engineering students. A vast number of both medical (93.75%) and engineering (65%) students were using a towel to dry their hair. Majority of both medical (83.75%) and engineering students (82.5%) believed that exfoliate scrub or massage for the scalp is necessary for good hair. When asked regarding which specialty of medicine dealt with the treatment of hair problems majority in both medical (92.5%) and engineering (86.25%) students replied as dermatologist or skin specialist. However, 7% of the engineering students felt that gynecologist needs to be consulted for hair-related problems. A vast number of the medical (68.75%) and 75% of the engineering students looked for lather formation as an important determining factor while selecting a shampoo, followed by appealing fragrance as the next determining factor. Only 25% of the medical and 31.25% of the engineering students felt that it was essential to use an air conditioner after shampooing every time after hair wash. Approximately, a total of 14.75% of the medical students and 13.75% of the engineering students were coloring their hair by artificial colors or mehendi. A good number of (58.75%) the medical students and (42.25%) engineering students were applying hair-fixing sprays or gels for hair styles. Five percent of the medical and 15% of the engineering students would undergo for hair straightening or perming procedures bimonthly. Seventy percent of both medical and engineering students felt that the claims made in the advertisement of hair care services or products in popular newspaper are genuine. However, a vast majority of both medical (88.75%) and engineering (92.5%) students felt that there should be governing authority that should test or validate the product claims before they are advertised on television. About 57.50% of the medical and 80% of the engineering students felt that the more expensive the hair care product, the better it is.

A total of eight questions were asked regarding practices concerning hair care among medical and engineering students, as depicted in Table 3. About 47.5% of the medical and 33.75% of the engineering students washed their hair on a daily basis, followed by 43.75% of the medical and 38.75% of the engineering students washed their hair twice a week and nearly an equal number of medical (60%) and engineering (62.5%) students trimmed or cut their hair once a month. Majority of engineering students (66.25%) had a habit of vigorous shaking of wet hairs by towel or hands versus 22.50% of the medical students. The use of traditional shikakai for hair wash was in fairly less number of medical (16.25%) and engineering students. Brands such as Head and Shoulders, Dove, Garnier, Ayur/Nyle, Sunsilk, and Loreal shampoo and conditioner were used in the descending order of use among the medical students, whereas Head and Shoulders, Garnier, Dove, Ayur/Nyle, and medicated shampoo and conditioner were used in descending order among the engineering students. Hair oil was the most common homemade remedies used by both medical (68.75%) and engineering (67.5%) students. This was followed by the use of eggs, lemon, and yogurt among the medical students and lemon, egg, and yogurt among the engineering students. More than 50% of the students would decide to buy a new hair care product depending on their...
own intuition, followed by influence or referral from friends and television advertisement in the order of descendence in both medical and engineering groups. About 62.75% of the medical and 72.5% of the engineering students agreed to using shampoos and conditioners which are advertised in television, magazines, or newspapers.

Table 2: Depicting attitude toward hair care among medical and engineering students

| Questions                                                                 | Options                        | Medical students (%) | Engineering students (%) |
|--------------------------------------------------------------------------|--------------------------------|----------------------|--------------------------|
| 1. Are you satisfied with your hair?                                     | Yes                            | 32.50                | 45                       |
|                                                                          | No                             | 67.50                | 55                       |
| 2. Do you think sharing of towels can transfer dandruff from one person to another? | Agree     | 35                    | 50                       |
|                                                                          | Somewhat agree                 | 58.75                | 25.50                    |
|                                                                          | Somewhat disagree              | -                    | 2.50                     |
|                                                                          | Completely disagree            | 7.50                 | 20                       |
| 3. How should you dry your wet hair?                                     | Towel                          | 65                   | 56.25                    |
|                                                                          | Fan                            | 17.50                | 18.75                    |
|                                                                          | Naturally                      | 32.50                | 12.50                    |
|                                                                          | Hair drier                     | 18.75                | 12.50                    |
| 4. Do you believe that exfoliate scrub or massage for scalp is necessary for good hair? | Yes                  | 83.75                | 82.50                    |
|                                                                          | No                             | 16.25                | 17.50                    |
| 5. Which specialty of medicine deals with treatment of hair problems?     | Physician                      | 7.50                 | 7.5                       |
|                                                                          | Gynecologist                   | -                    | 6.25                     |
|                                                                          | Skin specialist                | 92.50                | 86.25                    |
|                                                                          | Plastic surgeon                | -                    | -                        |
| 6. What type of qualities do you look for while selecting a shampoo?      | Good fragrance                 | 22.50                | 31.25                    |
|                                                                          | Good lather (foam)             | 68.75                | 75                       |
|                                                                          | Good color                     | 6.25                 | 3.75                     |
|                                                                          | NA                             | 3.75                 | 12.50                    |
| 7. Is it essential every time to use an air conditioner after shampooing? | Yes                             | 25                   | 31.25                    |
|                                                                          | No                             | 52.50                | 33.75                    |
|                                                                          | Don’t know                     | 22.50                | 35                       |
| 8. How frequently are you coloring your hair by artificial colors or mehendi? | Weekly     | -                    | 1.25                     |
|                                                                          | Monthly                        | 7.50                 | -                        |
|                                                                          | Bimonthly                      | 7.25                 | 12.50                    |
|                                                                          | NA                             | 85.25                | 86.25                    |
| 9. How frequently are you applying hair-fixing sprays or gels for hair styles? | Daily     | 6.25                 | 6.25                     |
|                                                                          | Weekly                         | 7.50                 | 8.75                     |
|                                                                          | Monthly                        | 45                   | 32.25                    |
|                                                                          | NA                             | 44.25                | 52.75                    |
| 10. How frequently do you go for hair straightening, perming procedures?  | Weekly                         | 0                    | 0                        |
|                                                                          | Monthly                        | 0                    | 0                        |
|                                                                          | Bimonthly                      | 5                    | 15                       |
|                                                                          | NA                             | 95                   | 85                       |
|                                                                          | Yes                             | 88.75                | 92.50                    |
|                                                                          | No                             | 11.25                | 7.50                     |
| 11. Do you think that there should be a governing authority that should test or validate the product claims before they are advertised on television? | They are genuine/true           | -                    | 5                        |
|                                                                          | Claims are somewhat true       | 70                   | 70                       |
|                                                                          | They are completely fake       | 30                   | 25                       |
|                                                                          | Completely                     | 8.75                 | 12.50                    |
|                                                                          | Somewhat agree                 | 48.75                | 62.50                    |
|                                                                          | Disagree                       | 27.50                | 20                       |
|                                                                          | Somewhat disagree              | 7.50                 | 5                        |

NA – Not applicable
It was interesting to find significant differences between medical students and engineering students as regard to KAP of hair care. This study also helps in understanding the expectations and needs of the young population regarding hair care. This study may provide the knowledge to pharmaceutical industries/hair care industries to manufacture or synthesize products that can fulfill certain demands in specific age groups. Various misbeliefs still exist in the mind of young students regardless of their educational background. This can be corrected by imparting scientific knowledge of hair care in the target population. Knowledge about trichology needs to be emphasized by dermatology faculty in undergraduate medical teaching and a subsequent study to demonstrate an intent to adopt more healthy behavior could be done after the introduction of basic knowledge of trichology in the curriculum.

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Nil.

Table 3: Depicting practices concerning hair care among medical and engineering students

| Questions                                                                 | Options               | Medical students (%) | Engineering students (%) |
|---------------------------------------------------------------------------|-----------------------|----------------------|--------------------------|
| 1. How frequently you take hair bath?                                     | Once a week           | 11.25                | 27.5                     |
|                                                                           | Daily                 | 47.5                 | 33.75                    |
|                                                                           | Twice a week          | 43.75                | 38.75                    |
|                                                                           | Once in 15 days       | 0                    | 0                        |
| 2. How frequently you trim/cut your hair?                                 | Weekly                | 0                    | 3.75                     |
|                                                                           | Monthly               | 60                   | 62.50                    |
|                                                                           | Bimonthly             | 40                   | 33.75                    |
| 3. Do you have habit of vigorous shaking of wet hairs by towel or hands?  | Yes                   | 22.50                | 66.25                    |
|                                                                           | No                    | 77.50                | 33.75                    |
| 4. Do you shikakai routinely for your hair?                               | Yes                   | 16.25                | 12.50                    |
|                                                                           | No                    | 83.75                | 87.50                    |
| 5. Which shampoo and conditioner are you using for scalp hair?            | Ayur/nyle             | 20                   | 8.75                     |
|                                                                           | Dove                  | 38.75                | 13.75                    |
|                                                                           | Head & Shoulders      | 28.75                | 32.50                    |
|                                                                           | Loreal                | 7.50                 | -                        |
|                                                                           | Garnier               | 20                   | 22.50                    |
|                                                                           | Medicated shampoo     | -                    | 7.50                     |
|                                                                           | Sunsilk               | 11.25                | -                        |
| 6. Are you applying any of the homemade remedies for your hair?           | Hair oil              | 87.50                | 81.25                    |
|                                                                           | Lemon                 | 27.50                | 15                       |
|                                                                           | Yogurt                | 7.50                 | 2.50                     |
|                                                                           | Eggs                  | 31.25                | 7.50                     |
| 7. You decide to buy a new hair care product after                        | Your friend tells you about it | 20            | 25                        |
|                                                                           | Advertisement on TV   | 12.50                | 22.50                    |
|                                                                           | On your own           | 65                   | 52.50                    |
| 8. Are you using shampoos and conditioners which are advertised in television, magazines, or newspapers? | Yes                   | 62.75                | 72.50                    |
|                                                                           | No                    | 37.50                | 27.50                    |

Conflicts of interest

There are no conflicts of interest.

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Eyebrow Whitening Induced by Imatinib

Sir,
Imatinib is a proven tyrosine kinase inhibitor (TKI) widely used for the treatment of chronic myeloid leukemia (CML). It is a rationally designed oral signal transduction inhibitor that specifically targets several protein tyrosine kinases: Abl, Arg (Abl-related gene), the stem cell factor (SCF) receptor (c-KIT), platelet-derived growth factor receptor, and their oncogenic forms, most notably bcr-abl. Its well-known adverse effects are hematological (cytopenia), edema, myalgia, electrolyte disturbances, and rash.

There has been reported a case with eyebrow whitening induced by dasatinib, another TKI. Here, we present the first case of eyebrow whitening induced by imatinib in literature, based on our experience.

A 56-year-old female patient was prescribed imatinib 400 mg/day for chronic-phase CML 1 year ago in our clinic. She had the diagnosis 3 years ago from another center and was using imatinib for 3 years. We discovered progressive eyebrow whitening for the last 3 months [Figure 1]. Ten to twelve hairs of whitening was counted bilaterally; it was <2/3 rd of the total eyebrow mass and evaluated as Level 2 (according to the Eyebrow Whitening Scale: Level 0: no whitening; Level 1: 1–3 strands; Level 2: between 3 and 10 strands, Level 3: 11 strands and 2/3 rd of whitening, level 4: whitening of 3/4 th or more strands).

There was no previous trichoscopic image, so no comparison could be performed. There were no other depigmented body hairs detected. There was no particular feature at her own medical or family history. Her CML was on complete remission, and her blood count, iron, Vitamin B12, zinc, and thyroid-stimulating hormone levels were completely normal. She did not complain of her eyebrow whitening, and so the TKI treatment was continued.

Sunitinib is a vascular endothelial growth factor receptor multikinase inhibitor and usually used for the treatment of metastatic renal cell carcinoma. A case of eyebrow whitening, possibly because of using sunitinib is defined in the literature. It was emphasized that the etiology is unclear.

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