Research Paper

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A Population Survey on Dandruff Causing Factors and Their Analysis by Using Electronic Data Processing and Stastical Tools.

Biochemistry

KEYWORDS : Dandruff , noninflammatory , Exercise , Diet , fruits in diet , Use of hair oil , malassezia species, WEKA .

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ABSTRACT

Dandruff is a very common skin condition that nearly all people experience at one point in their lives regardless of age or ethnicity. It affects the not just the scalp, but also the ears, eyebrows, sides of the nose, beard, and less commonly the central (often hair-bearing) part of the chest. Dandruff can affect any hair-bearing area or an area with even very small hair follicles. Other names for dandruff are seborrheic dermatitis or seborrhea. Malassezia (formerly known as Pityrosporum) is a genus of fungi. Malassezia is naturally found on the skin surfaces of many animals, including humans. In our project cause of dandruff is studied by a daily routine habits such as- Expose of hair in pollution , Quantity of water you drink daily , Exercise , Use of hair gel or dye , Diet , Fruits in diet , Use of hair oil etc . By doing the survey on daily routine habits , the data is collected and stastical interpretation of data is done with statistical softwares like WEKA . WEKA is a data mining software used to identify the cause of dandruff depended on daily routine habits.which helps in identifying the causative agents of dandruff. Through this survey we got that - People who drink more than 8 glass of water per day & do daily exercise & eat fruits do not have dandruff , Those who do not exercise daily & are non-vegetarian can have dandruff , The shampoo pantene and clinic plus are less effective for dandruff than head & sholder etc.

Materials and methodology

Firstly we have studied different aspects of daily routine habits which causing dandruff and according to the referencef we have collected , we prepared a questain array .We take the questions according to the following ideas

- **Water intake more than 8 glass**

drink at least eight glasses of water per day,Not only is it great for your overall health and wellbeing, it can also help in preventing and treating dandruff. Being well hydrated keeps your skin hydrated and prevents the skin on your scalp drying up and flaking. It may not be the cure of all cures, but it proves again that drinking more water never hurts.

- **exercise**

Just as exercise can help energise the cells on our scalp, a quick scalp massage can also get the blood flowing to this area, thereby helping to reduce dandruff. "Try giving your scalp a gentle massage once a week with a warm oil, such as almond, before shampooing out," suggests Nicky Clarke. "Massaging helps to improve the blood flow around your head and this also encourages hair to grow stronger and healthier."

- **Pollution**

A senstitive scalp is a scalp that feels itchy and irritated.Several factors,such as pollution, stress or even products that are too harsh can cause the scalp to become increasingly sensitive.To effectively treat your scalp , adopt a good daily hair care routine.

- **Diet**

The following foods are known to aggravate dandruff:

Fatty Diets : Most contemporary diets, particularly those with a heavy incidence of packaged or pre-packaged foods, are a rich source of saturated fats. This type of fat is needed by the body in smaller amounts. The daily requirement can be easily surpassed if packaged foods are regularly eaten. The excess fat is stored in the body that apart from promoting a tendency to gain weight harms the body's metabolic functions.

This is particularly applicable to the dandruff problem. Such fatty diets stimulate the sebaceous glands into producing excess amounts of sebum. The overproduction of sebum acts as a catalyst for various kinds of infections that worsen the dandruff situation. This includes fungus like P. ovale that dwells in scalps with excessive sebum levels. In this case, the scalp might appear oily, but it can still harbor dandruff due to the increasing infection that causes decomposition of the skin's cells, creating dandruff flakes.

Spicy Foods : Excessive sweating in the scalp is an established cause of dandruff. This is because sweating increases the vulnerability of the outer layer of skin cells in the scalp, making them susceptible to being easily scratched-off. Spicy foods are known to induce sweating. This is because spicy foods tend to raise the body's temperature, inducing perspiration that is more pronounced around the temple and the scalp. The sudden release of sebum from the sweat glands on the scalp further irritates the skin, causing a prickly feeling to develop.

Beverages : Dandruff is commonly understood as a condition of flaky or dry scalp skin. This condition can be largely controlled by regulating the hydration level of the body. Thus, foods that aid the elimination of bodily fluids should be consumed in minimal amounts. This includes beverages like tea and coffee that are established dehydrating agents. Such foods stimulate frequent urination and perspiration, lowering the body's fluid levels.

The following foods help to cure dandruff:

Green Vegetables and Fruits : Green vegetables and fruits with thick skins are reputed sources of soluble and insoluble fiber. The body's ability to absorb water from the large intestine is largely dependent on the overall health of intestines. If the intestines are overwhelmed with compacted/hardened stools, an unwanted state of artificial dehydration is established. This means that the body is unable to absorb sufficient water though the individual may be consuming the appropriate amount of fluids. This form of constipation can be solved by consuming green, leafy vegetables and fruits on a regular basis. While the soluble fiber helps in the motility of the intestine, the insoluble fiber presses against the impacted stools, alleviating constipation.

Vitamin-Rich Foods : Foods that offer a high concentration of Vitamin B are critical for limiting the proliferation of dandruff. Vitamin B is needed by the scalp to heal and thus limit the crusting of its upper surface. Simple foods like bananas, avocados, beef, tuna, legumes and oats are rich sources of various types of vitamin B.

Omega-3 Fatty Acid Foods : Food items like fish (or fish oil) and flaxseed are rich sources of omega-3 fatty acids. These foods are particularly recommended to dandruff sufferers whose dandruff is accompanied by excessively dry, bodily skin. These fatty acids

don't make the individual vulnerable to gaining weight. Instead, they keep the skin naturally moisturized, helping to cure dandruff.

Procedure :

- Prepared questain array depended on the above mentioned criteria(shown in form) , and done survey on dandruff in all the campus of MGM college : MGM college of biosciences and technology , MGM college of agribiotechnology , MGM college of food technology , MGM college of physiotherapy , MGM college of engineering(jnec) etc.
- Collected 500 forms and enter to the WEKA software to get the statistical interpretation of the data. Depended on different aspects the results are analyzed.

WEKA software :

Weka (Waikato Environment for Knowledge Analysis) is a popular suite of machine learning software written in Java, developed at the University of Waikato, New Zealand.

The Weka workbench contains a collection of visualization tools and algorithms for data analysis and predictive modeling, together with graphical user interfaces for easy access to this functionality. The original non-Java version of Weka was a TCL/TK front-end to (mostly third-party) modeling algorithms implemented in other programming languages, plus data preprocessing utilities in C, and a Makefile-based system for running machine learning experiments. This original version was primarily designed as a tool for analyzing data from agricultural domains, but the more recent fully Java-based version (Weka 3), for which development started in 1997, is now used in many different application areas, in particular for educational purposes and research. Advantages of Weka include:

- free availability under the GNU General Public License
- portability, since it is fully implemented in the Java programming language and thus runs on almost any modern computing platform
- a comprehensive collection of data preprocessing and modeling techniques
- ease of use due to its graphical user interfaces

Weka supports several standard data mining tasks, more specifically, data preprocessing, clustering, classification, regression, visualization, and feature selection. All of Weka's techniques are predicated on the assumption that the data is available as a single flat file or relation, where each data point is described by a fixed number of attributes (normally, numeric or nominal attributes, but some other attribute types are also supported). Weka provides access to SQL databases using Java Database Connectivity and can process the result returned by a database query. It is not capable of multi-relational data mining, but there is separate software for converting a collection of linked database tables into a single table that is suitable for processing using Weka. Another important area that is currently not covered by the algorithms included in the Weka distribution is sequence modeling.

Weka's main user interface is the *Explorer*, but essentially the same functionality can be accessed through the component-based *Knowledge Flow* interface and from the command line. There is also the *Experimenter*, which allows the systematic comparison of the predictive performance of Weka's machine learning algorithms on a collection of datasets.

The *Explorer* interface features several panels providing access to the main components of the workbench:

- The *Preprocess* panel has facilities for importing data from a database, a CSV file, etc., and for preprocessing this data using a so-called *filtering* algorithm. These filters can be used to transform the data (e.g., turning numeric attributes into discrete ones) and make it possible to delete instances and attributes according to specific criteria.
- The *Classify* panel enables the user to apply classification and regression algorithms (indiscriminately called *classifiers* in Weka) to the resulting dataset, to estimate the accuracy of the resulting predictive model, and to visualize erroneous predictions, ROC curves, etc., or the model itself (if the model is amenable to visualization like, e.g., a decision tree).
- The *Associate* panel provides access to association rule learners that attempt to identify all important interrelationships between attributes in the data.
- The *Cluster* panel gives access to the clustering techniques in Weka, e.g., the simple k-means algorithm. There is also an implementation of the expectation maximization algorithm for learning a mixture of normal distributions.
- The *Select attributes* panel provides algorithms for identifying the most predictive attributes in a dataset.
- The *Visualize* panel shows a scatter plot matrix, where individual scatter plots can be selected and enlarged, and analyzed further using various selection operators.

J48 Prediction model tree :

J48 implements Quinlans C4.5 algorithm [QUI92] for generating a pruned or unpruned C4.5 decision tree. C4.5 is an extension of Quinlan's earlier ID3 algorithm. The decision trees generated by J48 can be used for classification. J48 builds decision trees from a set of labeled training data using the concept of information entropy. It uses the fact that each attribute of the data can be used to make a decision by splitting the data into smaller subsets. J48 examines the normalized information gain (difference in entropy) that results from choosing an attribute for splitting the data. To make the decision, the attribute with the highest normalized information gain is used. Then the algorithm recurs on the smaller subsets. The splitting procedure stops if all instances in a subset belong to the same class. Then a leaf node is created in the decision tree telling to choose that class. But it can also happen that none of the features give any information gain. In this case J48 creates a decision node higher up in the tree using the expected value of the class. J48 can handle both continuous and discrete attributes, training data with missing attribute values and attributes with differing costs. Further it provides an option for pruning trees after creation.

Results and Discussion

J48 Prediction model tree(WEKA)

1. People who drink more than 8 glass of water per day & do daily exercise & eat fruits do not have dandruff.
2. Those who do not exercise daily & are non-vegetarian can have dandruff.
3. The shampoo pantene and clinic plus are less effective for dandruff than head & sholder.
4. People who are vegetarian & who go for morning walk do not have chances of getting dandruff.
5. People who use hair oil & who have less water intake (less than 8 glass) have chances of getting dandruff.
6. Female (<22) have greater tendency than male to have dandruff if they use hair oil & water intake is less & are non-vegetarian who do not do daily exercise.
7. Use of hair dye & hair gel do not have any correlation with dandruff.
8. Use of hair oil can affect dandruff.
9. Males (under 22) who don't exercise , are non-vegetarian & use hair oil have chances of having dandruff.

Discussion :

- People who drink more than 8 glass of water per day they have less cause dandruff, Similar result is also found in www.dandrufftips.com , And they found that a person must drink at least eight glasses of water per day, it can

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also help in preventing and

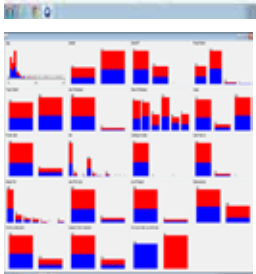
- treating dandruff. Being well hydrated keeps your skin hydrated and prevents the skin on your scalp drying up and flaking.[12]
- People who do daily exercise have less cause of dandruff, Similar result is also found in //him.uk.msn.com/grooming/dandruff-know-the-facts , And they found that Just as exercise can help energise the cells on our scalp, a quick scalp massage can also get the blood flowing to this area, thereby helping to reduce dandruff. [13]
- People who have proper diet have less cause of dandruff, Similar result is also found in www.skincareguide.com , and they have found that The people who eat vegetarian food have less chances of dandruff , Green Vegetables and Fruits : Green vegetables and fruits with thick skins are reputed sources of soluble and insoluble fiber. The body's ability to absorb water from the large intestine is largely dependent on the overall health of intestines. If the intestines are overwhelmed with compacted/hardened stools, an unwanted state of artificial dehydration is established. This means that the body is unable to absorb sufficient water though the individual may be consuming the appropriate amount of fluids. This form of constipation can be solved by consuming green, leafy vegetables and fruits on a regular basis. While the soluble fiber helps in the motility of the intestine, the insoluble fiber presses against the impacted stools alleviating constipation.[13]

Conclusion:

From these studies we concluded that - People who drink more than 8 glass of water per day & do daily exercise & eat fruits do not have dandruff and also who are vegetarian & who go for morning walk do not have chances of getting dandruff. Due to poor Daily routine habits such as people who do not exercise daily & are non-vegetarian can have dandruff. The growth of malassezia get reduce if we have good daily routine habits , so one should have good daily routine habits to reduce cause of Dandruff.

Report ananlysed through weka software:



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