Data Mining on Hand Washing Among the Communities of Kokrajhar Town, BTC, India.

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Abstract

Objectives: To study the knowledge and cautiousness regarding hand washing among communities of kokrajhar town under ward no. 5, 6, 7, 8 & 9. Method: A feasible observational study was carried out in February and March, 2011 by interview method and observation technique on common people. By applying data mining functionalities on the data collected by the aforesaid method, interesting patterns are generated for predictive mining. The study was undertaken among 100 from different communities, which includes persons from some family, office worker, hotel/restaurant workers, mesons, industry / factory workers, labours, main bazaar / daily bazaar area business men and women, shop keeper. Results: The result shows that 100% washed their hands with soap, 5% uses disinfectant, antiseptic after defecation. Only 85% washed their hands with soap before meal, 15% before serving and 25% before cooking. 85% of the respondents are aware of preventing diarrhoea & dysentery by hand washing. Only 15% give importance to boiling water for hand washing and 85% do not give importance to purification of water for hand washing. Time taken for hand washing was around 7 seconds to 30 seconds. Conclusion: The present study spotlighted that awareness of hand washing is required and this could prevent from diseases like diarrhoea, dysentery, acute lower respiratory infections etc. and hand washing with bathing could also prevent impetigo etc.

Introduction

Hand washing with disinfectants, soap and water is a hygienic measure to keep ourselves germ free. But in general many people wash their hands with only water. The use of soap in addition to water was first reported in 2800 B.C. The concept of cleansing hands with antiseptic agents probably came into scenario in the early 19th century. In the early 1825, a French pharmacist experimented that solutions containing chlorides of lime or soda generally eradicate bad odour especially associated with corpse and that such solutions could be used as disinfectants and antiseptics.

Healthcare data mining is basically the knowledge discovery process in medical databases. The data mining techniques builds model to display healthcare data characteristics and perform analysis by clustering, categorization, association analysis, predication and sequence analysis of the stored data.

Data mining tools transform original healthcare data to superior ones with richer data value. Data mining starts with selection of data and ends with analysis of transformed data.

Study Objectives
1. To find out the knowledge regarding hand washing.
2. To find out the cautiousness of hand washing.
3. To find out what exactly the urban communities practice for hand washing.
4. To find out the dominance of diarrhoea and associated diseases amongst the communities.

Data Collection & Methods

It was community based cross-sectional study carried out in urban kokrajhar. The studied area includes ward no. 5 through 9 where communities mostly found were Boro, Bengali Rajbongshi, Assamese, Muslims, and a few number of Rava, Garo, Mising, & Santhals.

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The study was carried out in the month of February and March, 2011 by me and help taken from my research colleagues for collecting data. The sample size was not organized as it was a pilot study. However, I resume moving to atleast 100 respondents and collected data by interview and observation method. The interview was carried out using a pre-designed proforma.

The mining methodology applied involves the following steps:-

### Hand wash data mining:

- **If hand_wash_knowledge exist then**
  - Rate 1;
  - Otherwise
  - Rate 0;
- **Enf If**
- Provide subject_matter as “cooking” or “serving” or “eating” or “defecation”;
- If subject_matter is “cooking” or “serving” or “eating” or “defecation” then
  - hand_wash_before_cooking = yes_or_no;
  - hand_wash_after_cooking = yes_or_no;
  - hand_wash_before_serving = yes_or_no;
  - hand_wash_after_serving = yes_or_no;
  - hand_wash_before_eating = yes_or_no;
  - hand_wash_after_eating = yes_or_no;
  - if yes for a_subject_matter then
    - provide washing_material_as_soap_and_water_or_only_water;
    - rate 1;
    - report disease_diarrhoea/dysentery_or_other;
  - otherwise
    - rate 0
    - report disease_diarrhoea/dysentery_or_other
- **End If**
- **End If**

### Association Analysis

- **Soap_use(X, “before_defecation”) => Soap_use(X, “after_defecation”)**
  - [support = 2%, confidence = 60%]
- **No_Soap_use(X, “before_meal”) => disease(X, “diarrhoea”)**
  - [support = 40%, confidence = 66%]
- **No_knowledge(X, “before_utensil_wash”) => No_knowledge(X, “After_utensil_wash”)**
  - [support = 2%, confidence = 60%]
and many associations that generates interesting patterns are established and to many extent predictions of knowledge of hand washing, detection and prevention of diseases can be studied.

**Result:** From the 100 respondents in all the studied areas, belonged to the age group of 12 to 65 yrs., and mostly female by gender and Hindu by religion. The output of the observations is carried out using data mining functionalities such as classification, association analysis etc. The observations made on the basis of the events like hand wash with soap before cooking, before meal etc. are shown in the following graph.

![Graph Showing use of soap with water of various events](image1)

35% of the respondents reflect knowledge of hand washing and on the other side only 5% use boiling water for hand washing and 25% with no knowledge of hand washing for cleanliness. It is seen that in the cleanliness observations 55% of Females are more aware where as in Males it is only 45%.

![Pie Graph Showing Cleanliness Knowledge](image2)

**Discussion:** Many studies have revealed that hand washing plays an important role in prevention of diarrhoea, dysentery, lower respiratory tract infections. From the study it is found that 40% of the respondents frequently suffer from diarrhea, respiratory infections etc. are shown below.

![Association Analysis of Hand Wash with Disease](image3)
From the intervention trials, washing hands with soap could reduce the risk of diarrhoeal disease by 42%-47% (according to the study made by Indian Public Health Association) and such type of intervention promotion of hand washing could save million of lives. In the developing country like ours better design of intervention are considered necessary to properly measure the impact of washing hands on diarrhoea, dysentery and acute respiratory tract infections. Such type of issues is to be discussed with the community through the media like TV / Radio and other type of mass communication.

**Conclusion**: Hand washing is an inexpensive way to prevent the spread of diseases to many extent. It is a hygienic measure to keep ourselves free from germs. Generally, it is essential to always wash hands after using the toilet, after blow or wipe nose, after play with pets, and after play outside, gently by using soap and warm water, wash for at least 20 seconds, cover your palms, the back of your hands, and in between your fingers with suds, make a good sudsy lather, and get underneath fingernails and in between fingers, rub and scrub! It’s the suds and the friction that kills germs and finally dry with a disposable paper towel.

The significance of hand washing should accentuate on important aspects like -
- # On what disease/infections, the hand washing could prevent and to what extent?
- # When the role of hand washing is necessary?
- # and How the washing of hands could prevent from diseases.

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