

Importance of understanding the need of personal hygiene: A comprehensive review

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Abstract

Personal hygiene may be defined as a practice contributing to maintaining health and preventing disease, especially through cleanliness of a personal individual. Good hygiene is a principal barrier to numerous communicable diseases, which includes the faecal–oral diseases, and which promotes well-being and healthier. To attain the significant health benefits, better hygiene should be built concurrently along with the development in the sanitation and water supply, and be merged with other interventions, equally improving in increasing income and nutrition. The main benefit of practicing personal hygiene is to decrease the disease communication and improve the health condition. Personal hygiene is very much important during menstruation or periods because women will be sweating and vaginal discharge will be there to prevent the odour and to be healthy personal hygiene is important. Many organizations are working for personal hygiene and for providing hygiene related awareness. Practices in personal hygiene include water source, water treatment, water storage, water use, excreta disposal, waste water disposal, food handling.

Keywords: personal hygiene, sanitation, cleanliness, hand sanitizer, hygiene kits

Introduction

World Health Organization defines, hygiene as the practices and conditions which help to prevent the spread of diseases maintain health. Personal hygiene mentions that the maintaining cleanliness of the body. Numerous people consider cleanliness with hygiene, but hygiene is a complex process which is a combination of various methods and practices to achieve cleanliness and sterility. Good hygiene is a principal barrier to numerous communicable diseases, which includes the faecal–oral diseases, and which promotes well-being and healthier. To attain the significant health benefits, better hygiene should be built concurrently along with the development in the sanitation and water supply, and be merged with other interventions, equally improving in increasing income and nutrition ^[1].

The prime goal of United Nation's Sustainable Development is well-being and good health which has a world-wide effect as its aim of reducing mortality. The possibilities of achieving the main goal requires a paradigm shift via the conventional approach to treatment, education and disease prevention ^[2].

Personal hygiene, also known as personal care, which includes: cleaning foot, nails, genitals, hair, bathing and dental cares, and washing of clothes. Grooming includes looking after hairs and fingernails, such as trimming of fingernails and barbing of hairs ^[3].

Household and personal hygiene can also act as a shielding strategy against upcoming epidemics. Therefore, hygiene is the prime security to lessen the spread of pathogens in everyday's environment. Washing hands with soap is likely to be one of the principal keys of averting transmission of infectious disease ^[4].

As personal hygiene is an important thing and which help to combat the germs on the body that could lead to bad odour

and illness.

Hand washing: Hand washing is also called as hand hygiene. It is an act of cleaning one's hand with water and soap to remove bacteria, virus, microorganisms or other unwanted and harmful substances stuck to the hand. The best thing to start thinking about personal hygiene is first our hands. We, people constantly use hands for touching lots of surfaces, eating, greeting people, playing or typing at work. So, hands are the biggest carriers of germs. Making sure that everyone practices good hygiene which is one of the easiest and quickest way to prevent illness like cold, cough, the flu and gastroenteritis which can be passed or contracted through poor hygienic in hands. The main way to prevent or stop the spread of the potential illness causing germs is by washing hands regularly and thoroughly with soap and water. Other illness also includes diarrhoea and pneumonia.

The main situations to wash the hands include

- Preparing food or before eating.
- Before handling the baby or infant.
- After handling animals.
- After coughing or sneezing or being around someone who is ill.
- After using the toilet

Dental care: Taking care of the teeth and practicing good oral hygiene will prevent gum disease, nasty infections and any tooth decay. To prevent all these infections and decay of tooth one should brush the teeth twice a day- in the morning and before bed. After brushing the teeth one should store the tooth brush in a clean, dry place and replace it regularly once every three months and especially after illness.

Bathing: Bathing is the main process of cleaning the body externally. Bathing with warm water and soap helps to keep the body clean and hygienic which is the main care for the body. During summer or hot weather taking bath twice a day is a good idea if possible. Daily washing the body is an important part of personal hygiene for many reasons like

- Bathing daily with soap and warm water helps to prevent odour which comes from the body as it kills the bacteria on the skin which is responsible for the bad odour.
- Those suffering from any kind of skin infections like athlete's foot or others, the effective method is to wash and dry the area on a daily basis which in turn can help to improve the condition.
- Those who got wet in rain or have been out in the city, taking bath or shower after getting home using soap and warm water can help clean any harmful germs off from the body.
- Washing hair at least once a week using cleansing solutions like shampoo and conditioner can help prevent head lice which in turn can improve uncomfortable and itchy sensation [5].

Hygienic clothes: Bacteria and dirt can build up on the clothes too. As a main part of personal hygiene routine, it is very important to take care of the clothes by washing and changing the clothes regularly, specially if anyone from the family member is unwell. To make sure the clothes are clean and hygienic try adding antiseptic liquid to make the laundry to kill any germs also making it tidy and clean [5].

Personal hygiene, is the primary most important practice to stay healthy. Once the person is having good personal hygiene routine it becomes an activity, so its very important that the set a good example for the children and the society to encourage them to take care of their own personal hygiene [5].

Methodology

This review includes data related to Personal Hygiene. Analyzing the measurement of personal hygiene which will promote the quality of healthcare system. The information was collected through computerized search from research article and various guidelines related to Personal hygiene using various journal sites and health care organizations.

Personal hygiene is defined as a practice to contribute in maintaining health and preventing disease, especially through cleanliness of a person.¹

Methods to stay hygiene

Good personal hygiene comprises of keeping all parts of the External body Clean and healthy. It is important for an individual to for maintaining physical as well as mental health.

There are various type of personal hygiene

- **Dental:** Dental hygiene include cleaning the teeth twice a day. Maintaining a proper dental hygiene habits may help to prevent issues like gum disease and cavities, it is also useful for preventing bad health.
- **Body:** Everybody should take a bath every day. Cleaning the body will help to prevent skin irritation like itching, as well as also help to remove the bacteria which causes body odour.
- **Hand hygiene:** Washing hand regularly is the best way

to prevent spreading of communicable disease. The CDC (Central for disease control and prevention) has recommended cleaning hand at certain times; which includes before and after preparing food, before having food, after going to washroom, after blowing the nose or sneezing, after touching garbage and after handling pets.

- **Nails:** Clean the nails on regular basis helps to reduce spreading of infection [6].

Current Situation of hygiene related problems

At present, several developing countries even now struggle to survive with consistent water shortages and is deficient of satisfactory water infrastructure. Hygiene creates a worldwide health challenge specially in the developing countries even though hygiene has been barely listed on the global development program in spite of the fact that a hygienic behaviour like hand washing could save lives of people every year.

1. Athlete's foot; which is also termed as TINEA PEDIS. It is an infection of the skin and feet which is caused by different fungi. It is spreading when contacted with infected skin scales or fungi in damp areas like showers and swimming pools. Maintaining appropriate techniques may help to control Tinea pedis, which include keeping nails short and clean, Wear sandals while entering any public showers, keep feet dry and cool, use appropriate medication for infection as recommended by physician.
2. Body Lice; which is termed as Pediculus Humanus Corporis; are parasites that can stay and leave eggs on cloths and can move to human skin for feeding on blood. Body lice infestation can be found in worldwide. Maintaining proper techniques may help to control this parasitic infestation, which comprise taking bath regularly, washing clothes using hot water, fumigation also needed for sometimes.
3. Dental Caries; which is also known as cavities and most commonly known as tooth decay. It is caused by breakdown of enamel; which occurs due to presence of bacteria on teeth that breakdown foods and generate acid that destroys tooth enamel. Maintaining good oral hygiene can prevent dental carries; which include brush teeth twice a day, eat nutritious meals, visiting dentist regularly.
4. Human scabies which is caused by mite such as "Sarcoptes scabiei var. hominis". The scabies mite burrows into the skin where it leaves eggs. Maintaining good hygiene is important to prevent scabies; which include cleaning bed, cloth and towel on daily basis.
5. Trachoma which is caused by bacterium Chlamydia trachomatis. It can easily spread through direct personal contact, sharing towels and cloths and flies that have contacted with infected persons eyes or nose. Untreated trachoma can cause severe damage of eyelid. WHO has invented a health strategy which is known as S.A.F.E for the elimination of trachoma, S.A.F.E- Surgery, Antibiotics, Facial cleanliness, Environment improvements [7].

Signs of poor domestic hygiene include

- Not cleaning the toilet properly.
- Not washing bedding and cloths frequently.
- Not storing food properly.

Signs of poor personal hygiene include

- Not washing hands.
- Not showering regularly.
- Not washing hair.

Under developing or developing countries such as Africa, Asia, and some in South America that generally lack a high grade of personal hygiene. The benefit of practicing hygiene is the decrease in disease communication and enhanced health. The great benefits of hygiene can be achieved, if improvements in hygiene are concomitantly made with development in the food industry, water supply and enhanced nutrition. Good hygiene practices are among the basics of the survival and development of children. Without practicing hygiene, the lives of billions of people especially the vulnerable populations and the children would be at danger of suffering from water, sanitation, and hygiene related disease. Most of the diarrhoea case is attributed to poor water, sanitation and hygiene practices. Diarrhoea is occurring due to faecal oral transmission, whereas one ingests faeces directly through unhygienic hands or indirectly through unhygienic food and water. Washing hand after visiting toilet, before cooking can help to prevent transmission of infectious agent. Washing hand with soap or hand sanitizer has been known as one of the most cost-efficient health interventions to decrease the burden of disease [8].

Personal hygiene in pregnant women

Throughout the pregnancy, women should be specially cautious about her personal hygiene. They sweat more along with more vaginal discharge than non-pregnant women, due to hormonal changes and are more vulnerable to infection by germs in the surroundings. Keeping a clean body helps avoid infection. Infections are caused due to the numerous anatomical, biochemical and physiological variations that happen in the body of pregnant women particularly the ones that has to be done with raise in the hormone level, repression of the immune system and may likewise interpret for the exaggeration in the elimination of waste body products like urine, saliva, mucus, sweat etc during pregnancy [9].

Poor hygiene can lead to hookworm infestation, which is a risk element for causing maternal anaemia as it is straight linked to adverse outcomes in pregnancy. Exposure to unimproved sanitation and unsafe water during pregnancy leads to increase the infection's risk which leads to adverse consequences such as preterm delivery and low birth weight. Dental hygiene is especially significant during pregnancy because of increased levels of oestrogen which can cause swelling and increased tissue gum sensitivity. Washing hand with soap is the most vital hygiene action one can take, particularly before cooking food and after going to the toilet. A pregnant women should always wash her body daily with clean water specially her genital area.⁹

Personal hygiene in women

Practices and knowledge of personal hygiene is vital for healthy life. Women's hygiene is so significant for numerous reasons like women are constantly occupied in household chores such as preparing food, cleaning of the house and caring for families. It means that health of women is on huge risk and sustaining personal hygiene is important for her, personal hygiene is essential from health point of

view, keeping oneself spotless is crucial not only for self but also for people around you. It depends on women, how much courtesy she pay towards everyone's hygiene to keep everyone free from illness like gastro intestinal diseases, respiratory diseases or skin diseases, personal hygiene is likewise imperative at community level. It is vital specially during menstruation (periods), sweating, and vaginal discharge to stop body odour and to be healthy. Changing sanitary pads or tampons frequently according to the menstrual flow can help stay fresh from vaginal odour and other infections. It is specially significant at the places where proper manners are required like social activities, work or in school. Maintaining personal hygiene after urination like cleaning or wiping from front to back can decrease the spread of organisms.

Avoiding soap with perfumed or scented when cleansing the vagina and alternatively using ph balanced cleansers can help maintain the normal Ph and the normal flora within the vaginal area. Avoid wearing hard tight undergarments as it can lead to tightening of the area and cause excessive sweating due to decreased air circulation. Keeping the undergarment dry is the prime step to eradicate the growth of microorganisms as moisture can trigger their production. Being alarmed of various types of vaginal discharge help know the vaginal infection associated. The properties of vaginal discharge depend on the time of the menstrual cycle and it can be set as a marker for variations in women [10].

Personal hygiene during menstruation**A. Change sanitary napkin every 4-6 hours**

Changing tampons or sanitary napkins within every four to six hours is the basic rule to establish vaginal hygiene. Menstrual blood which releases from the body attracts numerous organisms from our bodies, which increase in the warmth of blood and which cause rashes, irritation or urinary tract infections. Changing tampon or sanitary napkin regularly restrict the development of organisms and prevents infections.

B. Wash yourself properly

Washing the vagina regularly is enormously important because the organisms adhere to the body after the removal of sanitary napkin. Most of the people wash themselves regularly, but not in the correct technique which is the hands in motion as of the vagina to anus, but not in other direction which is vice-versa.

C. Do not use vagina hygiene or soaps products

Using vaginal hygienic products regularly is a good idea, but using these products during periods can turn the things around. Vaginas have their own property of mechanism of cleaning which gets produced during menstrual cycles and the artificial hygienic products can contain the natural process of leading to the infections and growth of the bacteria.

D. Discarding of the sanitary napkin properly

Disposing of the sanitary napkins and tampons properly is an important step during menstruation. Wrap the sanitary napkins properly before discarding, so the infections caused by bacteria do not spread. Make sure that the sanitary napkins should not be flushed because that will block the toilet causing water to backup, spreading bacteria all over it. Since women likely touch the stained area while wrapping

them, washing hands properly is of chief action after the sanitary napkin or tampons have wrapped and discarded.

E. Stick to one method of sanitation

Women use tampons and sanitary napkins, or two sanitary napkins instantaneously during heavy flow which is an effective method. While it can keep the place dry and avoid stained clothes, as it can also cause infections too. The combination of these two methods absorbs the blood making unaware to the need to change sanitary napkins and tampons. Without changing the sanitary napkins or tampons, the accumulated blood develops bacteria and may lead to cause the infections. So, it is necessary to use one tampon or sanitary napkin and change it as regularly as it can be done during heavy flow. These important rules will help the women to stay healthy and manage her period's better ^[11].

Personal hygiene in adolescent children

Primarily, being clean is a necessary step to function socially and secondly being clean permits to be sanitary maybe not completely free of germs, but mostly free of germs which are harmful. Personal hygiene comprises of various behaviours like and brushing teeth and washing hands which retain viruses, bacteria and fungal away from the bodies. These behaviours help to protect mental well-being and activity. Likewise, good personal hygiene will assist to keep feeling good. Meanwhile those who don't take care of their personal hygiene therefore body odour, dirty clothes, and bad breath suffer from discrimination and this determines mainly lead to problems related to mental. The main important point is that the people have their personal hygiene but few people do their hygienic activities better than others, these activities mainly depends on each society, person's culture and family norm. Hands are the significant transmissions mood of infectious disease among adolescent children, washing hands with soap aid to defend children from two known global paediatric killers like lower respiratory infection and diarrhoea, hand hygiene reduces illness-related absences. Serious times for hand washing include after cleaning a child, after using the toilet and before handling food. Knowledge, Attitudes and beliefs are the measures that are thought to be on the causal path to the behaviour. Poor practice, knowledge and attitudes to personal hygiene has bad significances for children for long period of time for overall development. Alertness of health aspects of behavioural sanitation is significant because it controls the degree of sustainability of an intervention in sanitation. Awareness strongly effects one's washing hands beliefs and practices ^[13].

Benefits of personal hygiene

Good personal hygiene plays an important role in the society for both social and health reasons. Keeping body and hands clean is very much important in preventing the growth and spread of infection and illness. This simple habit dose not just benefit the health but it can also help to protect those who are surrounding you.

Personal hygiene also has its own social benefits. Since good personal hygiene routine is caring for the body and washing the body regularly, as it reduces the chances of body odour which can be embarrassed in the social situations and at work or any other places ^[13].

Key organizations supporting hygiene and the work of first global patient safety challenge

- Association for Professionals in Infection Control and Epidemiology (APIC)
- Centre for Disease Control: Clean Hands
- Hand Hygiene Resource Centre
- Institute for Healthcare Improvement
- International Federation of Infection Control (IFIC)
- International Hospital Federation
- International Society for Quality in Health Care (ISQUA)
- National Resource for Infection Control (NRIC) UK
- Society for Healthcare Epidemiology of America (SHEA)
- Webber Training Inc ^[14].

Behaviours to be recommended in hygiene education

Water source

Water resource is the main and natural resources of water that are potentially valuable. Uses of water include industrial, agricultural, household, environmental and recreational activities.

- All men, women, and children in the community should use safe water sources for food preparation and drinking.
- Adequate water must be used for hygienic purposes such as household cleanliness, bathing and washing clothes.
- Improved water sources should be used hygienically and be well maintained.
- Water should be resourcefully used and must not be wasted. Wastewater must be properly drained away.
- There must be no risk of contamination of water sources from nearby wastewater drainage, latrines, cattle or agricultural chemicals.

Water treatment

Water treatment is a kind of process that will improves the water quality to make for a suitable specific use. The main use of water includes drinking water. Simple purification procedures like chlorination, which should be carried out on the water source if essential. If essential, water can be filtered to remove any, guinea worm or solid material etc.

Water collection

Water collection is a main step after water treatment. Drinking water must be collected in vessels which are clean and without contacting with hands and other materials. Water must be transported in a covered container or vessel.

Water storage

Drinking water must be deposited or stored in a separate container from other domestic water wherever possible. Water must be stored in vessels that are covered and cleaned regularly.

Water drinking

Drinking water must be taken from the storage vessel or container in a manner that cups, hands or other substances cannot contaminate the water.

Water use

Adequate volumes of water must be available and used for personal hygiene and domestic hygiene. It can be estimated

that a minimum of 30–40 litres per person per day are needed for personal and domestic hygiene.

Food handling

Food handling is a main step which includes how to handle and clean the vegetables and fruits. Fruits and vegetables must be washed with safe water, and food should be properly placed and covered. Hands should be washed with soap or ash before food is prepared and eaten. Utensils which are used for food preparation and cooking food should be washed with sterilized and safe water as soon as possible after use and keep in a clean place.

Excreta disposal

Disposal of the excreta in a proper place keeps the surroundings clean and neat. All children, women, and men should use latrines at home, at school and at work. Hand-washing facilities and soap or ash should be available, and hands should always be washed after defecation and after helping babies and small children. Household latrines should be sited in a way that the pit contents cannot enter water sources or the groundwater table. The stools of infants and young children should be safely disposed of.

Wastewater disposal

Wastewater from the household activities should be disposed of or can be reused properly. Measures must be taken to safeguard the wastewater is not permitted to create breeding places for mosquitos and other disease vectors or to contaminate safe water.

Planning hygiene education

Cleaning is a vital habit in our lives which is extremely useful for everyone and needful for a solid way of life. Cleaning would be the main need and important for each inhabitant of nation and it is the greatest start of dispose social issue after the general community just as a raise the progression of nation with its development of resident. Uncertainly if there is a lack of proper toilets or washrooms individuals force to go outdoor for latrine or any other activities due to these many individuals confronted such a big number of contagious infections issues which result in open defecation. Open defecation is a main issue and subsequently many issues confronted sickness mishaps.¹⁵

Providing hygienic education in a community involves the following steps

- Discussion with the community and local agencies
- Selecting the priority of hygienic behaviours which should be changed, based on observing data and needs within the community
- Analysis of influence on selected behaviours and the implications for hygiene education.¹⁶

Conclusion

Results of various articles, organization's mission, various government guidelines considering all these revealed that hand washing, dental care, washing clothes, bathing, cutting nails will help to achieve personal hygiene in children, women and men. In under developing countries like Africa, Asia, and some in South America, these countries are lacking in back in personal hygiene which increase the risk of personal hygiene related problems. The main benefit of practicing personal hygiene is to decrease the disease communication and improve the health condition. In

pregnant women poor hygiene can cause hook worm infestation, which leads to maternal anaemia and it will directly affect in preterm delivery and low birth weight. Women plays a important role in household chores constantly by preparing food, cleaning the house and caring the children so personal hygiene for women is very much important. Personal hygiene is very much important during menstruation or periods because women will be sweating and vaginal discharge will be there to prevent the odour and to be healthy personal hygiene is important. Personal hygiene during menstruation or periods include change sanitary napkin every 4-6 hours, wash yourself properly, do not use vagina hygiene or soaps products, discarding of the sanitary napkin properly, stick to one method of sanitation. Good personal hygiene in adolescent children helps to keep them hygienic and it makes them feeling happy.

There are many organizations which are working for personal hygiene and for giving awareness like Association for Professionals in Infection Control and Epidemiology (APIC), International Federation of Infection Control (IFIC), International Society for Quality in Health Care (ISQua), Resource for Infection Control (NRIC) UK, and Society for Healthcare Epidemiology of America (SHEA) etc. Behaviours are recommended for personal hygiene like water source like everyone should use safe water, water treatment include purification procedure like chlorination etc, water collection like drinking water must be collected in clean vessels, water storage include drinking water which must be deposited or stored in a separate container from other domestic water wherever possible, water drinking must not be contaminated or should not be stored for many days in vessels or pots, water use in which water should be used in proper manner, food handling which include fruits and vegetables which should be washed in safe and clean water, utensils after use should be washed with safe water, excreta disposal which includes the excreta must be disposed of in a proper place, washing hands should be the main procedure after defecation, waste water disposal should be utilized in a proper way which can be recycled and used for watering the plants and waste water should not be stored in front of house which may contaminate the surroundings.

Abbreviations

1. APIC-Association for Professionals in Infection Control
2. IFIC- International Federation of Infection Control
3. ISQUA-International Society for Quality in Health Care
4. NRIC- National Resource for Infection Control
5. SHEA-Society for Healthcare Epidemiology of America

Reference

1. Nath KJ. Home hygiene and environmental sanitation: a country situation analysis for India. International Journal of Environmental Health Research. 2003; 13(1):S19-28.
2. Odonkor ST, Kitcher J, Okyere M, Mahami T. Self-assessment of hygiene practices towards predictive and preventive medicine intervention: a case study of university students in Ghana. BioMed research international. 2019; 2019.
3. Ahmadu BU, Rimamchika M, Ibrahim A, Nnanubumom AA, Godiya A, Emmanuel P *et al.* State

- of personal hygiene among primary school children: a community based cohort study. Sudanese journal of paediatrics. 2013; 13(1):38.
4. Aunger R, Greenland K, Ploubidis G, Schmidt W, Oxford J, Curtis V. The determinants of reported personal and household hygiene behaviour: A multi-country study. PloS one. 2016; 11(8):e0159551.
 5. Campos AK, Cardonha ÂM, Pinheiro LB, Ferreira NR, de Azevedo PR, Stamford TL, *et al.* Assessment of personal hygiene and practices of food handlers in municipal public schools of Natal, Brazil. Food control. 2009; 20(9):807-10.
 6. Lodato F, inventor; Gillette Canada Inc, assignee. Personal hygiene implement construction. United States patent US.1999; 5:956-796.
 7. Hommann E, inventor, Gimelli, Co AG, assignee. Hand-held appliance for personal hygiene. United States patent US.1987; 4:655-198.
 8. Afifi HS, Abushelaibi AA. Assessment of personal hygiene knowledge, and practices in Al Ain, United Arab Emirates. Food Control. 2012; 25(1):249-53.
 9. Nun DR, Adesuyi EO, Olawoore SA. Knowledge attitude and practices of pregnant women attending comprehensive Health Centre, Isolo, Ondo State towards Hygienic Practice. International Journal of TROPICAL DISEASE & Health. 2018; 30(2):1-0.
 10. Imtiaz KS, Begum K, Begum N, Naureen S, Barua J, Faruque J, *et al.* Practice of personal hygiene among rural women of a selected community in Bangladesh. Northern International Medical College Journal. 2014; 6(1):29-31.
 11. Dhingra R, Kumar A, Kour M. Knowledge and practices related to menstruation among tribal (Gujjar) adolescent girls. Studies on Ethno-Medicine. 2009; 3(1):43-8.
 12. Lal BS, Kavitha G. Assessment of personal hygiene knowledge and practices: an empirical study of schooling children in Warangal. International Journal of Science and Research (IJSR). 2016; 5(8):1521-4.
 13. Tan SL, Cheng PL, Soon HK, Ghazali H, Mahyudin NA. A qualitative study on personal hygiene knowledge and practices among food handlers at selected primary schools in Klang valley area, Selangor, Malaysia. International Food Research Journal. 2013; 20(1).
 14. Smith VS. Clean: a history of personal hygiene and purity. Oxford University Press, 2008.
 15. Bansal R, Singh R. Swachh Bharat Abhiyan: A Mission to Clean India.
 16. Cleland T, inventor; Cleland Thomas H, assignee. Personal hygiene device and method. United States patent application US. 2006; 10:891-310.