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## *Contents*



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# SUBJPH

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All communications should be addressed to:

***The Editor:***
**SUBJPH**
**Department of Public Health**
State University of Bangladesh
77, Satmasjid Road, Dhanmondi,
Dhaka, Bangladesh.

Phone: 88-02-8151781-5
Fax: 88-02- 8123296

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SUBJPH

## Editorial Board

# SUB Journal of Public Health (SUBJPH)

State University of Bangladesh Journal of Public Health (**SUBJPH**), the peer-reviewed journal of the State University of Bangladesh is one of communication and dissemination materials of public health concern information and research findings.

**SUBJPH includes:**

- Short news briefs to in-depth investigations of current public health news
- Science Selections that summarize selected research papers,
- Book reviews of current publications, calendar of events,
- Mini-monographs (4-6 articles covering one topic).

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Originality of Submission Contributions submitted to any edition of **SUBJPH** must be original works of the author(s) that have not been previously published (print or online) or simultaneously submitted to another publication. Submitted manuscripts are acknowledged upon receipt.

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Three reviewers will submit comments on each manuscript. Authors are strongly encouraged to submit the names and contact information (including e-mail addresses) of experts in their field of study for addition to **SUBJPH**'s scientific reviewer database. Each reviewer is asked to complete the review within three weeks. Authors must submit the revised manuscript and a letter responding to reviewers' comments.

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**Research Articles** must be of original research involving human subjects. Observational epidemiologic studies and randomized clinical trials that are relevant to the clinical or public health practice are particularly encouraged. Original manuscripts on ethical, legal, social, and policy issues are also accepted.

**Book Reviews** are short critical evaluations of recently published books. The editors select the books and the reviewers.

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**Editorials** offer opinions and ideas to focus attention on important areas of environmental health and to stimulate discussion of such topics. Our editors, editorial board members, and guest editors contribute these statements.

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Manuscripts must be written in the active voice and be typed double-spaced in English. Number pages consecutively, beginning with the title page. Numbering of lines is preferred but not required. The reference list, tables, and figure legends should begin on separate pages and should also be double-spaced.

**Article Length**
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References and citations should be formatted according to EHP style (examples provided below). This will reduce copyediting time and the number of author queries included in page proofs. Authors should double-check all references for accuracy and completeness of information, spelling, accents, symbols, subscripts and superscripts, and italics. Authors are fully responsible for the accuracy of their references. Check the final draft to make sure citations and references match. Any manuscript that is not properly formatted will be returned to the author for correction before review.

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According to Rubin et al. (2001), "it is only with a multidisciplinary and collaborative approach that the environmental and public health significance of Pfiesteria will be fully understood."
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- Short running head
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- Abstract
- Introduction
- Materials and Methods
- Results
- Discussion
- Conclusions
- References
- Tables
- Figure legends
- Figures

# EDITORIAL

Public health professionals have a major role to play in health-care management within the health-care delivery system. The diversity and complexity of professional practice and making realistic projections of future trends in public health requires creative and intra-disciplinary solutions to the many challenges that may arise in future. The mission of public health is to fulfill society's interest in assuring conditions in which people can lead a healthy life. Public Health Department carries out this mission through organized and interdisciplinary efforts to address the physical, mental and environmental health concerns of communities. Thus the discipline of Public Health is for professionals who are genuinely interested in an equitable health care delivery system in its preventive, promotive and rehabilitative aspects. Keeping these objectives in mind, Public Health education at SUB aims at imparting training for future leaders in health care with appropriate skills to conduct both research and policy analysis.

The editorial and review committee of **SUBJPH** is committed to publish high quality papers and to build a network of public health professionals to cover the whole spectrum of public health disciplines. **SUBJPH** concentrates on education for public health practice and research emphasizing inter-disciplinary and inter-sectoral cooperation in public health and health sciences. It will carry a wide variety of in-depth articles on all aspects of public health, including epidemiology, nutrition, family health, environmental health, sexually transmitted diseases, gerontology, behavioral medicine, rural health, health promotion and public health policy. The publications are peer reviewed. The editorial board constituted of public health experts from across Bangladesh and abroad. The mission is to build a national resource among universities that advocate for the improvement and maintenance of personal and community health based on the principles of health care management, disease prevention, health promotion and protection, and appropriate public health policy. We are looking forward to receiving intellectual input from our readers and subscribers.

***Editor***

# Ten Steps to Conduct Research

**MSI Dhami**

*State University of Bangladesh*

**Etymology**
The word *research* derives from the French **recherche**, from **rechercher**, to search closely where "chercher" means "to search" (see French language); its literal meaning is 'to investigate thoroughly'.

**STEP 1.**

- **Pursue an important topic**
  - your dissertation topic
  - adapt to new circumstances
    - may have a skill others need (stat; algorithmic)
  - take advantage of opportunities
- **Work on what you are interested in**
- **Develop a scarce and critical skill**

**STEP 2**

- **Learn about the topic**
  - library research
    - read journals
    - annotate
    - organize
  - identify issues in need of further research

**STEP 3.**

- **Design studies leading to new knowledge**
  - learn statistical and other tools needed
  - fit into overall theoretical framework
- **Write**
  - submit findings to appropriate outlets
    - where similar work appears
    - where your institution wants you to publish

**STEP 4.**

**How Do You Find Topics?**

- **Your Dissertation**
  - you are the world's expert
  - follow up
- **Keep Up In Your Field**
  - read journals
  - attend conferences (attend sessions)
  - develop contacts

**STEP 5.**

**How Do You Find Topics?**

- **Grant & Consulting Opportunities**
  - Grants
    - rarely exactly what you wanted to do
    - still good experience
    - tend to lead you back to what society thinks it wants
    - grants are good for your resume
  - Consulting
    - can lead you astray
    - until you can afford it, limit it to your research

**STEP 6.**

**How Do You Find Partners?**

- **Attend presentations**
  - in your Department & University
  - professional organizations & meetings
- **See what others are doing**
  - you may be able to work together
- **Local connections better**
  - hard to do distance research
    - people - e-mail will work
    - organizations - best to be in town

**STEP 7.**

**Is Solo Research Best?**

- **Depends**

  - if you have everything you need, YES
  - if you could use help on some aspect, NO
- **For Promotion & Tenure**
  - do a few solo works to prove you can
  - do more joint work to show teamwork

**STEP 8.**

**Finding Appropriate Journals**

- **keep up with your research**
- **keep a bibliography**
  - sorted by idea
  - can have a number of dimensions
- **look at references in articles you read**

**STEP 9.**

**Establish Research Stream**

- **Pursue your research on a long-term, thorough basis**
  - treat it as a life-work
  - leading to a magnum opus
- **Keep up with journals**
- **Concentrate on fundamental ideas**

**STEP 10.**

**Reconciling Teaching & Research**

- **Prioritize**
  - need to pay attention to students
  - teaching usually involves more basic concepts
  - research interested in advanced, esoteric
- **Wherever you can,**
  - use your research in your teaching
  - instill a spirit of learning (research) in students

Basic research (also called *fundamental* or *pure* research) has as its primary objective the advancement of knowledge and the theoretical understanding of the relations among variables (see statistics). It is *exploratory* and often driven by the researcher's curiosity, interest, or intuition. It is conducted without any practical end in mind, although it may have unexpected results pointing to practical applications. The terms "basic" or "fundamental" indicate that, through theory generation, basic research provides the foundation for further, sometimes applied research. As there is no guarantee of short-term practical gain, researchers may find it difficult to obtain funding for basic research. Research is a subset of invention.

Examples of questions asked in basic research:

- Does string theory provide physics with a grand unification theory?
- Which aspects of genomes explain organismal complexity?
- Is it possible to prove or disprove Goldbach's conjecture? (i.e. that every even integer greater than 2 can be written as the sum of two, not necessarily distinct primes)

Traditionally, basic research was considered as an activity that preceded applied research, which in turn preceded development into practical applications. Recently, these distinctions have become much less clear-cut, and it is sometimes the case that all stages will intermix. This is particularly the case in fields such as biotechnology and electronics, where fundamental discoveries may be made alongside work intended to develop new products, and in areas where public and private sector partners collaborate in order to develop greater insight into key areas of interest. For this reason, some now prefer the term *frontier* research.

**Research processes**

**Scientific research**

*Main article: Scientific research*

Generally, research is understood to follow a certain structural process. Though step order may vary depending on the subject matter and researcher, the following steps are usually part of most formal research, both basic and applied:

- Formation of the topic
- Hypothesis
- Conceptual definitions
- Operational definitions
- Gathering of data
- Analysis of data
- Test, revising of hypothesis
- Conclusion, iteration if necessary

A common misunderstanding is that by this method a hypothesis can be proven. Generally a hypothesis is used to make predictions that can be tested by observing the outcome of an experiment. If the outcome is inconsistent with the hypothesis, then the hypothesis is rejected.

However, if the outcome is consistent with the hypothesis, the experiment is said to support the hypothesis. This careful language is used because researchers recognize that alternative hypotheses may also be consistent with the observations. In this sense, a hypothesis can never be proven, but rather only supported by surviving rounds of scientific testing and, eventually, becoming widely thought of as true (or better, predictive), but this is not the same as it having been proven.

A useful hypothesis allows prediction and within the accuracy of observation of the time, the prediction will be verified. As the accuracy of observation improves with time, the hypothesis may no longer provide an accurate prediction. In this case a new hypothesis will arise to challenge the old, and to the extent that the new hypothesis makes more accurate predictions than the old, the new will supplant it.

**Historical**

*Main article: Historical method*

The historical method comprises the techniques and guidelines by which historians use historical sources and other evidence to research and then to write history. There are various history guidelines commonly used by historians in their work, under the headings of external criticism, internal criticism, and synthesis. This includes higher criticism and textual criticism. Though items may vary depending on the subject matter and researcher, the following concepts are usually part of most formal historical research:

- Identification of origin date
- Evidence of localization
- Recognition of authorship
- Analysis of data
- Identification of integrity
- Attribution of credibility

**Research methods**

The goal of the research process is to produce new knowledge, which takes three main forms (although, as previously discussed, the boundaries between them may be fuzzy and warm):

- Exploratory research, which structures and identifies new problems
- Constructive research, which develops solutions to a problem
- Empirical research, which tests the feasibility of a solution using empirical evidence

Research can also fall into two distinct types:

- Primary research
- Secondary research.

Research methods used by scholars include:

- Action research
- Cartography
- Case study
- Classification
- Experience and intuition
- Experiments
- Interviews
- Mathematical models
- Participant observation
- Simulation
- Statistical analysis
- Statistical surveys
- Content or Textual Analysis
- Ethnography

Research is often conducted using the hourglass model.[1] The hourglass model starts with a broad spectrum for research, focusing in on the required information through the methodology of the project (like the neck of the hourglass), then expands the research in the form of discussion and results.

**Publishing**

Academic publishing describes a system that is necessary in order for academic scholars to peer review the work and make it available for a wider audience. The 'system', which is probably disorganized enough not to merit the title, varies widely by field, and is also always changing, if often slowly. Most academic work is published in journal article or book form. In publishing, STM publishing is an abbreviation for academic publications in science, technology, and medicine.

Most established academic fields have their own journals and other outlets for publication, though many academic journals are somewhat interdisciplinary, and publish work from several distinct fields or subfields. The kinds of publications that are accepted as contributions of knowledge or research vary greatly between fields.

Academic publishing is undergoing major changes, emerging from the transition from the print to the electronic format. Business models are different in the electronic environment. Since about the early 1990s, licensing of

electronic resources, particularly journals, has been very common. Presently, a major trend, particularly with respect to scholarly journals, is open access. There are two main forms of open access: open access publishing, in which the articles or the whole journal is freely available from the time of publication, and self-archiving, where the author makes a copy of their own work freely available on the web.

**Research funding**

*Main article: Research funding*

Most funding for scientific research comes from two major sources, corporations (through research and development departments) and government (primarily through universities and in some cases through military contractors). Many senior researchers (such as group leaders) spend more than a trivial amount of their time applying for grants for research funds. These grants are necessary not only for researchers to carry out their research, but also as a source of merit. Some faculty positions require that the holder has received grants from certain institutions, such as the US National Institutes of Health (NIH). Government-sponsored grants (e.g. from the NIH, the National Health Service in Britain or any of the European research councils) generally have a high status.

**See also**

- Academic conference
- Advertising Research
- Creativity techniques
- Demonstrative evidence
- Due Diligence
- Empirical research
- European Charter for Researchers
- Internet research
- Innovation
- Lab notebook
- List of fields of doctoral studies
- Marketing research
- Open research
- Operations research
- Original research
- Participatory action research
- Psychological research methods
- Research and development
- Social research
- Empircal evidence

An important selling point for supporting public universities in a developing society is that higher education can be a powerful instrument for building a more equitable society. By providing equal access for good students from the lower social and economic backgrounds, the public university can become a great social and economic equalizer in society. The information obtained seems to suggest that a majority of students in public universities in Bangladesh come from the relatively affluent section of the urban population. This leads to the disturbing conclusion that the significant public subsidies received by these institutions, far from removing the existing inequities in the society, may be reinforcing these inequities. If these findings are supported by additional empirical evidence, there would indeed be a sound rationale for higher education reform in Bangladesh. Such reform would likely need to include the establishment of a realistic fee structure at public universities, the development of student loans to assist the poor in gaining access to higher education, the creation of special admissions programs for underprivileged youth, and a healthy partnership between public and private universities.

# STERILIZATION PRACTICES AMONG THE DENTAL SURGEONS HAVING THE PRIVATE DENTAL CLINICS OF KATHMANDU, NEPAL

**R Pradhan[1], S Lahiry[2], N Yasmin[2], M Shahjahan[2]**

[1] *Samaj Dental Hospital, New Baneshwor, Nepal;* [2]*Department of Public Health, State University of Bangladesh*

## Abstract

The present descriptive study was conducted among 132 dental surgeons selected purposively through semi-structured questionnaires to investigate the sterilization practices among the private dental clinics of Kathmandu. The mean age of the respondents was 33.58 ±7.503 years. Majority (59.8%) comprised of male dental surgeons. 97% had sterilization instruments in their clinics. Among those 40% used hot air oven. Majority (90%) were found to wash their hands before examination with antiseptic, 98.5% wore gloves, 98% used apron and 84% used face mask. Of the gloves used, 57% used the reusable type of gloves and majority (71%) did not practice sterilization of the masks they were reusing. 85% cleaned the operatory surface after each examination of the patients primarily (50%) with water and antiseptic. Maximum (37.9%) used disinfectants in the clinics was betadine. Dental assistants were chiefly found to be involved in both sterilization (82.6%) and waste disposal of the clinic (86.4%). Maximum (45.5%) sharps used in the dental clinics were found to be disposed with the other general wastes in the container rather than metal container (39.4%). 75.8% were found to clean the non-patient areas with mop and detergent daily. 85% of the dental surgeons were found to be vaccinated against HBV and majority (65.2%) of the dental assistants were not. Most (69.7%) of the patients visiting the dentists for treatment seek for sterilization. The study showed that when the number of daily patient increased, majority (61%) used autoclave for sterilization of gloves showing strong relationship between number of patients and item used to sterilize gloves (p=0.000). Most dentists complied with the CDC guidelines; however, many dentists did not utilize the full range of recommended infection control procedures, necessary to minimize the risk of cross-infection in dental practice. So, it should be ensured that "standard precautions" should be followed and implemented strictly by all dental professionals.

**Key words:** Sterilization; Dental surgeon; Dental assistant; Dental Clinic

## Introduction:

Oral and dental diseases are the major public health concern in both developed and developing countries. As one of the least developed countries in the South Asia and in the world, Nepal does not have adequate financial or human resources and capacity to manage the epidemics of the infectious and communicable diseases. In addition, oral health care workers are ill equipped to

protect themselves, their families, patients and the community from contracting infectious diseases. Dental professionals are exposed to variety of microorganisms present in the blood, saliva and possible injury from the sharp instruments while treating the patients which may cause different infectious diseases such as virus induced hepatitis, virus induced herpes, syphilis, gonorrhea, tuberculosis acquired immunodeficiency syndrome and others. The effective infection control procedures and universal precautions in the dental clinic and in the dental laboratory will prevent cross contamination that could extend to dentists, dental technicians and the patients.[1] In a survey[2] done in 2000, it has been estimated that 98% of the caries on the permanent dentition occur as occlusal caries. The prevalence of caries and tooth decays is gradually increasing and over the last 20 years, an increasing trend of untreated dental caries is evident[2,9]. Another study[3] carried on rural Nepalese population using the Community Periodontal Index (CPI) shows none of the population had healthy periodontium and they should be educated and made aware. People are more and more exposed to dental treatment. In dental surgery, sterilization has prime importance like other branches of surgery. But regarding this sensitive issue, there is neither any study, nor any actual data or records in this subject. So the present study was an effort to assess the current practices in the private dental clinics of Kathmandu city.

## Materials and Methods

This descriptive cross-sectional study was conducted from September through December 2007. A total of 132 respondents were chosen from the valley. A face to face interview was conducted using structured and semi-structured questionnaires. Data was noted very carefully and systematically. Each respondent was given their code name and answers were entered separately. All data were edited, compiled and analyzed while back up and cross-checking was done on a regular basis to nullify any error.

## Results

Of the total respondents, 47% were in the age group of 28-34 years while the mean age was 33.58±7.503 years. Among the interviewed respondents, majority (59.8%) comprised of male dental surgeons. 91% of the dentists had only BDS (Bachelors in Dental Surgery) degree. Regarding the length of practice by the dentists in their profession 37.9% had less than 5 years, 35.6 % was 5 to 10 years while 26.5% more that 11 years. In respect to the number of daily patients that they attended in the clinic, 37.9% responded of having be <4 patients/day and same percentage informed that they usually receive 5-10 patients daily while 24.2% use to receive more that 11 patients in a day. Data also showed that the monthly income of the most of the dentists (46.2%) was between NRs. 20,000- 50,000 , 29.5% below NRs. 20,000 and those who earned above NRs. 50,000 comprised only 24.2%. The mean ± S.D. for monthly income was 34409.09±25192.679 NRs. Majority (97%) had the sterilization instruments in their clinics. Out of these, almost 91% of the instruments were found to be functioning and only 9.1% was out of order. 80% of the components seemed to be working while 20% were not functioning.

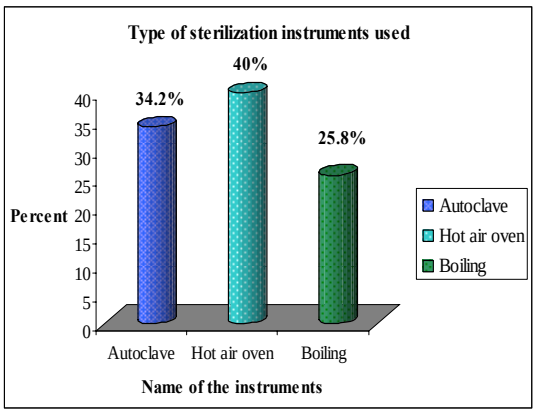


**Figure 1. Distribution of the respondents by the type of instrument they use**

Figure 1 showed that most of the respondents (40%) were found to use hot air oven, 34.2% used autoclave and lastly 25.8% used boiling water devices as the sterilizing instrument in their dental clinics. Out of the interrogated respondents, almost all (90%) of the dentists washed their hands before examination of the patient. Of those who washed their hands, majority (63.9%) used water and antiseptic while 32.8% used water and soap and very few (3.4%) used water solely. Almost all (98.5%) were seen to wear gloves out of which 56.9% used the reusable type. Majority (65.8%) of the reused gloves was sterilized with detergent and water only. Majority (97.7%) wore the protective covering during attending the patient and 84.1% wore mask. Majority (84.4%) were found to clean the operatory surface after examining each patient by water and antiseptic (50 %).

In most of the dental clinics, dental assistants were responsible for sterilization (82.6%) while in 17.4% cases dental surgeons took care of the sterilization themselves. The waste disposal of the clinic was chiefly the duty of the assistants (86.4%) and only 18(13.6%) of the dentists were involved themselves. Most of the wastes (45.5%) were seen to be disposed with other general wastes. Majority of the respondents (75.8%) were found to clean the non-patient area with mop and detergent daily. The method of disinfecting the water was mostly (56.1%) by boiling. Majority (84.8%) of the dentists were vaccinated against HBV while in the other hand, 65.2% of the dental assistants had not received HBV vaccine. Reports published from 1970 through 1987 indicate nine clusters in which patients were infected with HBV associated with treatment by an infected Dental Health Care Workers.[4] In addition, transmission of HIV to six patients of a dentist with acquired immunodeficiency syndrome has been reported.[5] So, standard precautions has to be properly implemented.

Among the interviewed respondents it was seen that majority (69.7%) of the respondents said that the patients visiting their clinics seek for sterilization while 30.3% said that patients did not care about the sterilization in their clinics. Most of the respondents (47.5%) expressed that wearing of the gloves was the most preferred way.

**Table 1. Association between number of patients and items used to sterilize glove**

| Number of patients visiting the clinic daily | | Item used to sterilize glove | | Total |
|---|---|---|---|---|
| | | Detergent and water only | Autoclave | |
| Below mean | N | 53 | 20 | 73 |
| | % | 72.6 | 27.4 | 100 |
| Above mean | N | 19 | 30 | 49 |
| | % | 38.8 | 61.2 | 100 |
| Total | N | 72 | 50 | 122 |
| | % | 59 | 41 | 100 |

**$\chi^2$=13.871, df =1, p=.000**

Table 1 show that if the number of daily patients was below mean; the method of sterilization of gloves was with detergent and water only where as when the number increased above the mean (9), majority (61%) used autoclave for sterilization. The p value was found to be 0.000 with the degree of freedom of 1. Therefore it can be drawn that the standard procedure as autoclave is strongly associated with increasing number of patients and the difference is strongly significant.

**Discussion:**

The study attempts to explore the current sterilization practices in the private dental clinics of Kathmandu valley. The study revealed that 97% of the dental clinics had sterilization instruments. The picture looks good but only the presence of it doesn't justify good sterilization practice. The present study shows that maximum (40%) used hot air oven as their sterilizing instrument. According to the popular publications, autoclave remains the preferred method of sterilization. The advantage was the efficient destruction of most of the resistant bacterial spores in brief intervals of exposure, the easy control of quality and lethality, the absence of toxic residue on materials following the sterilization process.[6] School of dentistry, Virginia Common Wealth University recommends autoclave as the correct process of sterilization.[7]

25.8% used boiling water devices as the sterilizing instrument in their dental clinics in the present study. In Martin's (1985) study to evaluate the efficiency of boiling water devices used under the supervision of a microbiologist was done. 81% of the microorganisms were identified before the treatment remained viable proving that boiling does not even disinfect and doctors are still using the boiling method for sterilization exposing the patients to the continuous risk of cross infection.[8]

Maximum used disinfectants by the dental surgeons in their clinics were betadine (37.9%). A chemical germicide registered as a "hospital disinfectant" and labeled for "tuberculocidal" activity is recommended for disinfecting surfaces that have been soiled with patient material. These intermediate-level disinfectants include phenolics, iodophors, and chlorine-containing compounds.[9] Betadine, phenol alcohol provides low disinfection. So, the current practice is not as per the recommendation. It was also seen that the person involved in sterilization was mostly (82%) the dental assistant in the clinic rather that the dentist themselves and the person involved in waste disposal of the clinic was also the assistant rather that the dentist which should have been the other way round. It was found that 90% of the dental surgeons washed their hands before the examination. According to the CDC guidelines, not only the dentists, but also the DHCWs should wash their hands before and after treating each patient and after bare-handed touching of inanimate objects likely to be contaminated by blood, saliva, or respiratory secretions.[1] Soap and water will remove transient microorganisms acquired directly or indirectly from patient contact[9]; therefore, for many routine dental procedures, such as examinations and non-surgical techniques, hand-washing with plain soap is adequate. It was found that 33% of the dentists were using soap and water for hand washing which was adequate for examination of the patients and while doing non-surgical procedures as soap and water will remove transient microorganisms acquired directly or indirectly from patient contact. In the

present study, almost all (99%) were found using the gloves. In a survey on "Cross infection control" among 1371 professionally trained dentists in Malaysia. 54% of the respondents were found to be routinely wearing gloves, 13 % did not and 83% wore masks.[10] Aizawa's (1996) study to all 566 dentists of the Iwate Dental Association in Japan was conducted. Gloves, masks and other protective garments were generally worn but most of the dentists did not use them in the whole course of treatment limiting the usage to surgical treatment only and while treating the "high risk group" patients.[11] So while comparing with the previous studies, the practice seems to get better and awareness and responsibility seems to be increasing.

Disposal was maximum (45%) with the other general wastes. Injuries from the needles and other sharps contaminated with blood or body fluids present the greatest risk of transmitting blood borne diseases. According to the standard precaution, used disposable syringes and needles, scalpel blades, and other sharps should be placed in appropriate puncture-resistant containers. 85% of the dentists and only 35% of the dental assistants were found to be vaccinated against the HBV. The OSHA blood borne pathogens final rule requires that employers make hepatitis B vaccinations available without cost to their employees who may be exposed to blood or other infectious materials.[12] In addition, CDC recommends that all workers, including DHCWs, who might be exposed to blood or blood-contaminated substances in an occupational setting, be vaccinated for HBV.[13-14] In the present study, when the number of daily patient increased, majority (61%) used autoclave for sterilization showing strong relationship between number of patients and item used to sterilize gloves (p=0.000).

**Conclusion**:

Though oral heath is an inseparable part of total health, it has often been treated as if it was not and left to develop rather independently. In conclusion, from the present study, it was found that most dentists comply with the use of gloves, masks, protective gown and HBV immunization for themselves; however, many dentists do not utilize the full range of recommended infection control procedures that are necessary to minimize the risk of cross-infection in dental practice. As the infectious status of the patient is often unknown to prevent contamination and cross infection either to the patient or to the dentist it is necessary to treat all patients as potentially infectious. There should be a policy guideline regarding medical waste disposal and the "standard precautions" should be followed strictly by all dental professionals and their implementation should be ensured. Provision of vaccine against blood borne pathogens e.g. HBV should be mandatory for dental surgeons and dental assistants.

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# UTILIZATION OF EMERGENCY OBSTETRIC CARE SERVICES AMONG POST-NATAL MOTHERS IN THE KERANIGANG UPAZILLA OF DHAKA DISTRICT

**RS Banu[1], GU Ahsan[2], N Yasmin[2], MA Hossain[3], KA Hayder[4], S Lahiry[2]**

*[1]TB Control Program, WHO, [2]Department of Public Health, State University of Bangladesh (SUB), [3]NIPORT, Dhaka, [4] TB Management, WHO*

## ABSTRACT

A descriptive cross-sectional study was carried out to explore the factors influencing the three delays of emergency obstetric care (EOC). Interviews were performed on 119 post-natal mothers who received EOC from public and private facilities in Keraniganj Upazilla, Dhaka using semi-structured questionnaire where 43% of respondents were interviewed at hospital and 57% at household based on availability of facilities records. The utilization rate was higher among the lower age group, and mean age was found to be 23 ± 5 yrs. Most of the respondents (56%) completed secondary or higher secondary education. The median income of the families was Tk 8000. Respondents were having 1-2 child delivered at facilities ($p< 0.05$). Significant association was found between mothers' educational status with the history of home trial ($p < 0.01$). The median distance of the facilities was 2 km. Decision making for hospitalization was mostly influenced by husband (54%), in-laws (29%), parental relatives (28%), Dai (8%) and by respondent herself (13%). Analysis indicated that delay at home had significant association with family income ($p < 0.001$) and mothers' education ($p < 0.001$). 78% of mothers were aware of at least 3 danger signs of pregnancy, and did not delay beyond 6 hrs. Major mode of delivery was caesarian section (64%). In public hospitals 56% delivery type was vaginal in comparison to 20% in private clinics ($p < 0.001$). Cost of vaginal delivery was Tk 2608 for public and Tk 4738 for private facilities and NGOs on an average while cost of caesarian delivery was Tk 10658 and Tk 12478 respectively ($p = 0.11$ for vaginal and 0.21 for caesarean).

**Key words:** Emergency obstetric care (EOC); Public hospital; Private clinic

**Introduction:**

Bangladesh has a fairly extensive physical infrastructure for the delivery of health and family planning services, however many facilities still do not meet the needs of women with respect to emergency obstetric care (EOC) specially in rural Bangladesh. The outcome of obstetric emergency is influenced by "three delay", the factors that govern the decision to seek care, reaching the medical facility, receiving adequate treatment and in turn are impacted by a set of factors, which needs to be explored in designing appropriate policy intervention.[1]

In the developing world, complications during pregnancy continue to be the leading cause of maternal death and

disability for women of reproductive age (15–49) and overall, they account for more than one-quarter of deaths among women. The major causes of maternal death include hemorrhage, sepsis, eclampsia, obstructed labor and complications due to unsafe abortions. Furthermore, estimates assert that for every 100 women who become pregnant, 15 will develop life-threatening complications mostly around the time of birth.[2]

In Bangladesh, one factor potentially influencing the high MMR is that nearly two thirds (63%) of mothers do not receive antenatal care. Differences in the coverage by division are minimal although the rural-urban differences are still high.[3] The Most recent Bangladesh Demographic and Health Survey Report shows that urban–rural differentials in antenatal care coverage is quiet large, overall 71% of urban women and 43% of rural women received antenatal care from a medically trained person,[4] where 42.2 % of urban and 27.3% of rural women was informed of the signs of pregnancy-related complication. Women's participation in making all the specified decisions is higher in urban area (35%) than in rural area (26%).[4] For birth that did not received an antenatal check up during pregnancy, mothers were asked why they did not seek antenatal care 63% of the women reported that the check up was not needed or that it provided no benefit, 18 % considered it to be expensive, 13% did not know the services.

Most of the causes of all maternal deaths can be prevented and treated by providing EOC during labor and during follow-up of postpartum period. Skilled birth attendant (SBA) is present at less than 14% of all cases. Therefore, safe delivery at home with referral linkages, addressing "three delays" and management of complications and EOC services are critically important for saving women as well as newborns. The three delays contributing to maternal deaths are delay in deciding to seek care; delay in reaching appropriate care; delay in receiving care at health facilities. The first two "delays" relate directly to the issue of access to care, encompassing factors in the family and the community, including transportation. The third "delay relates to factors in the health facility. Unless the three delays are addressed, no safe motherhood programmes can succeed.[1]

## Materials and Methods

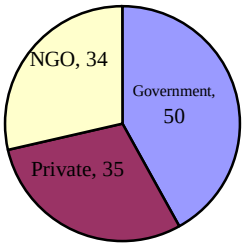
A descriptive cross-sectional semi-structured questionnaire-based study was conducted among mothers who delivered baby at hospital during the period October 2006 to November 2006 in one Upazilla Health Complex (UHC), one Union Health and Family Welfare Center (UHFWC), two private clinics and two NGO clinics in Keraniganj Upazilla of Dhaka District. A total 119 respondents were interviewed for the study.

A pre-tested semi-structured self-administered questionnaire consisting of both closed and open ended questions was used in this study. The questions were divided into 5 sections: socio-demographic characteristics; socio-economic; socio-cultural. service related factors and knowledge on pregnancy related sign and antenatal care (ANC). The information of facility records were collected to conduct the interview of the mothers those who had already been discharged after delivery at facilities.

## Results and Discussion

In the study area, 119 respondents were interviewed. Among them 50 received treatment from government hospital, 35 from private clinics, and 34 from NGO clinics (Fig 1). Government and private as well as NGO health facilities were available in the study area. Younger women had better health seeking behavior.

**Figure 1: Type of facilities used by the mothers (N=119)**




Age ranges were 16 to 40 years. Average age of the respondents was 23 (±5) years. More than 75% of the women were below 25 years. This finding is consistent with the data of a study by Khanum et al[5] where majority of the respondents were age 20-24 years. Hlady et al study[6] also found younger mothers delivered at facilities.

The present study shows that hindu community had higher tendency to seek health services. Similar findings are reflected in the study of Ensor and Cooper[7] where religion was the only factor that distinguished home from facility-based professional attendance and specifically Hindu women were more likely to attend a facility; in contrast they were less likely to call a midwife at home. In this study 56% of women completed secondary education that is consistent with national statistics where substantially greater likelihood of delivering at health facilities (44%) was found to have completed secondary education. This finding is also consistent with Tim Ensor and Stephanie Cooper[7] where 46% of women who completed secondary or higher education delivered at health facilities.

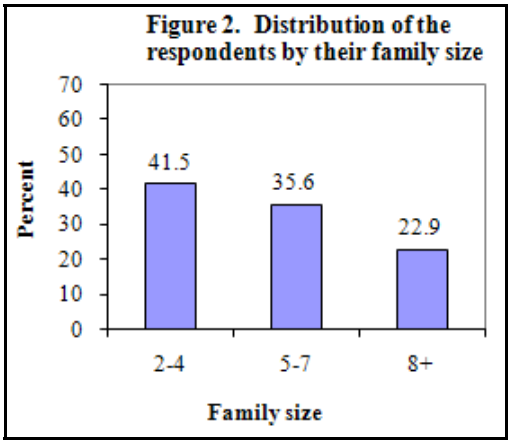
**Table 1. Distribution of respondents according to educational status of the respondents and their husbands**

| | *Respondents* | | *Husbands* | |
|---|---|---|---|---|
| Educational level | N | % | N | % |
| No Education | 20 | 16.8 | 15 | 13.4 |
| Primary (I-V) | 32 | 26.9 | 32 | 28.6 |
| Post-primary (VI–XII) | 67 | 56.3 | 65 | 58.0 |
| **Total** | 119 | 100 | 112* | 100 |

*(7 not stated)

Women were not empowered in terms of earning. Only 5% of women worked for earning. Husbands' education was significantly associated with utilization ($p < 0.05$). Among respondents whose husbands were educated secondary or higher education, 71% used private/NGO facilities in comparison to 29% who used government hospitals. On the other hand less educated families were more likely to use government hospitals for delivery services. Among illiterate husbands 60% used government hospitals compare to 40% used Private/NGO clinics. Similar findings were observed in Khanum et al[5] as utilization of a trained attendant consistently increased with higher level of parents' education. About 46% of women with ten or more years of schooling called a midwife to the home or delivered in a health facility with a midwife compared to less than 13%

among women with no education. While the differences were somewhat smaller, the same pattern was observed in regards to father's education. Majority of the husbands were professionally established as employee or businessmen (66%) having monthly income more than Tk 5000. Average gravida was 1.7 (±1.05). First birth delivered at facilities are 58% and there is similar likelihood of delivery at health institutions which is found higher as BDHS 2004. Hlady et al study[6] also found lower birth parity mothers delivered at facilities. Each woman had less than two pregnancies up to 25 years old and women of 26 to 40 years have nearly three pregnancies on an average while 16% women experienced fatal termination or their child died.

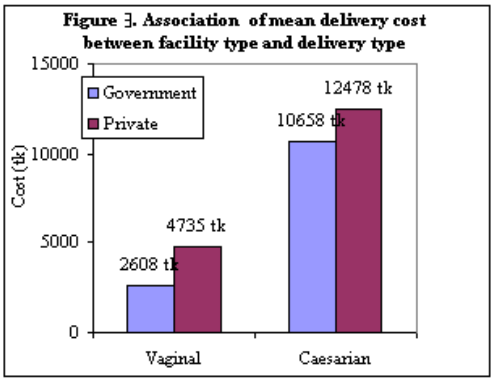



Among families, 26% lives in rented house and they are mostly unskilled labors' families. Average family size was 5 (Fig 2). All the families were found to use safe water for drinking either from tube-well (79%) or from supply pipe (21%). Sanitation status was better than national scenario. Only 8% families had pit latrine or open latrine compared to 39% in BDHS 2004. Rather septic tank was 59% in study area compared to 3.2% as BDHS 2004. It is important to state that health-seeking behavior comprises personal health and hygiene status.

**Table 2. Distribution of decision makers among the respondents for hospital delivery**

| Decision Maker | % |
|---|---|
| Husband | 53.8 |
| Parents/brother-sister in law | 24.4 |
| Relatives in-law | 5 |
| Parents/brother/sister | 22.7 |
| Parental relatives | 4.2 |
| Neighbor | 2.5 |
| Birth attendant | 6.7 |
| Self | 13.4 |
| **Total** | **100** |

The data concerning decision to visit hospitals/clinics for delivery are presented in Table 2. Decision of getting hospital services was influenced mostly by husbands (53.8%) and parents (22.7%) while only 13.4 % of women could decide of her own to visit hospital or clinics.




Respondents were mostly exposed with television rather than listening radio. More than 60% women watched TV frequently whereas 60% never listened radio while only 20% liste p= 0.11 frequently. Approximately 10% have any access to TV or radio. Household asset score was calculated for

11 items. Families possessed more than 7 items on average and 65 % families had 7 to 10 items, 2% had all the 11 items and 15% had 1-5 items. This finding is consistent with the national statistics that those households with highest quintiles have a substantially greater likelihood of delivering at health facilities (40% as BDHS 2004).

Delivery place and delay of hospitalization were influenced by several factors including husband education, parents or parent-in-law encouragement, poverty and previous birth history. It was found significant ($p<.05$) that in case 1st or 2nd pregnancy most pregnant (53%) women stayed at their parents house during the delivery period. Decision for hospital delivery was influenced 25 to 30 percent by either parents or parents-in-law. Husband was the key decision maker (54 percent) for hospital delivery. Findings are consistent with Haider et al., 2000 that household structure, the decision to select the birth attendant has been found to rest predominantly with husbands and guardians (in 70% cases).[8]

Choice of home delivery was high. 42 % of the women tried home delivery before they go to hospitals. Home delivery was significantly ($p<.01$) influenced by mothers' education ($p<.01$). Less educated mothers (75%) tried home delivery more in compare to educated mothers (26%). Mostly birth attendants help for home delivery.

Parents or parents' in-law mainly influences for home delivery. Many mothers decided themselves for home delivery unless there was any physical problem due to cost and fear of caesarian. Mothers seeked hospital services mostly for prolong labor, incomplete delivery, baby position, sickness and previous experience of fatality. Rickshaw-Van (47%) and taxi (38%) were common mode of transportation. Delay beyond 12 hours at home happened for 13 % cases. Most patients (60%) stayed at home 0-4 hours after onset of delivery. Average distance (median value) of the hospital or clinic was 2 kilometers. As per Khanum et al[5], distance appeared to be a major barrier for both facility and home-based care. Use of a trained attendant dropped by about half when distance from the home to the health centre was beyond one kilometer.[5] Hlady et al study found that services receivers tended to live closer to treatment centres – 66% of cases were within 1 mile[6] It was one hour on average to reach to the hospital. Once the patient reached hospital it took no delay for admission. Among the women 17 percent felt that there wax something lack in the hospitals or clinics. Few mothers were afraid of caesarian delivery specially in the private clinics and the cost involvement explained as very high. Most mothers may did wait at home for delivery and delayed at home till the complication happens due to high cost of hospital delivery. Delay at home was significantly associated with income ($p<.001$) and mother's education ($p< .001$)

Most delivery type was caesarian (64%) and rest 36 percent deliveries were vaginal. One delivery was done through vacuum method. In the government hospitals significantly ($p< .001$) higher 56 percentage delivery type was vaginal compare to only 20 percent in private clinics. Vaginal delivery cost were 2608 taka for Government hospital and 4738 taka in Private clinics while caesarian delivery cost was 10658 and 12478 on average in Government hospital and Private clinics respectively. The variation of the costs was so high within the facility type that independent sample t-test found that there were no significant difference

between the expenditure of Government and Private Facilities. The cost included Medicine, food, treatment and others. Cost related to medicine and treatment kits mostly had to buy. Most mothers explained it as too much irrespective of facility type. The facts also give a message that due to similar cost involvement there was no significant difference (p=. 22) to choice the institutes by the respondents having monthly income of taka 0-2500 received delivery care 50 % from Government and 50% from Private/NGO clinic.

Similar cost involvement was identified as research report on "The hidden cost of 'free' maternity care in Dhaka, Bangladesh"[5] mean cost for normal delivery was 1275 taka and for caesarean section 4703 taka. The study also stated that free maternity care in Bangladesh involves considerable hidden costs which may be a major contributor to low utilization of maternity services, especially among low-income groups. To increase utilization of safer motherhood services, policy-makers might consider introducing fixed user charges with clear exemption guidelines, or greater subsidies for existing services, especially caesarean section.[4]

Mothers' knowledge on ANC and danger sign was poor. Though ANC coverage was estimated through verbal autopsy were 84%, minimum mother oriented about safe delivery and pregnancy related danger signs during antenatal check up. Only 52% mothers received counseling for birth plan during antenatal check up. Only 26% family planned savings for delivery. Fifty five percent mothers had no idea about how many visit exactly they required during pregnancy, 21% said about every months 7% said about 2- 3 times. Only 13% mothers explained as exact number as 4 times. Seventy eight percent Mothers having knowledge on pregnancy related 3-4 danger signs did not delayed at home beyond 6 hours, where 9% having knowledge for 3-4 sign delayed beyond 12 hours. Forty one percent mothers tried home delivery having knowledge on 3-4 signs of in compare to 59 % tried home delivery having knowledge on 1-2 signs.

**Conclusions and Recommendations**

The study assessed the current status of emergency obstetric related with three delays at rural upazilla of Bangladesh. The study finding is encouraging with the findings that both public and private sector contributing their role for safe delivery at rural context. Among the three delays the first delay that is delay at home is significantly high. Health seeking behavior is better among the young mother with one child or in case of first pregnancy that is found significant. Delay at home was significantly associated with income and mother's education. Exposure of TV was higher than radio among the respondents. Husbands were found as the most influential person for decision making for hospital delivery. In spite of having history of antenatal care 42% of respondents attended the facilities after failed home trial.

In the Government hospitals significantly higher delivery type (56%) was vaginal in comparison to only 20% in private clinics. No significant (p =0.22) difference was found to choose government or private facilities among income group of <2500 taka who received delivery care 50% from government and 50% from private/NGO clinics. Knowledge on ANC and danger Signs on pregnancy complication was poor.

Majority of the respondents expressed satisfaction with the services irrespective

for government and private facilities. But most of them were agreed about further requirement of facilities for poorest of the poor and recommended for more awareness and motivational program with the message that acknowledge the benefit of delivery at facilities. Therefore, highest priority program[9,10] to increase female education, quality ANC as recommended by the WHO protocol, effective BCC, pro-poor services, program monitoring and evaluation can be emphasized to combat the menace.

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# Knowledge and Practice on Reproductive Health Care among Adolescent School Girls of Kathmandu, Nepal

**K Bhattarai[1], M Shahjahan[2], N Yasmin[2], MH Faruquee[2], S Lahiry[2]**

[1]*Health Directorate, Kathmandu, Nepal;* [2] *State University of Bangladesh*

**ABSTRACT**

A descriptive cross-sectional study was carried out in Bhadrakali VDC of Kathmandu, Nepal to assess the level of knowledge and practice on reproductive health (RH) among 240 adolescent girls. Face to face interview was carried out with the semi structured questionnaire. In this study 52.5% of the respondents were in the age group 15-16 yrs while the mean age was 14.97 years. It was found that 57.9% of the respondents had good knowledge on RH and the rest had poor knowledge. Majority of the respondents' (76.3%) had their first menstruation at the age between 12-14 years. 57.1% respondents seemed to know about the availability of service for legal abortion in Nepal. 72.1% respondents had heard about the contraceptive method. Almost all of the respondents (98%) had heard about the HIV but only 33% knew it was the "Germ of AIDS". Majority of the respondents (84.6%) said that HIV/AIDS can spread from the infected mother to her baby. It was seen that majority (56.7%) had no discussion about the RH related issues in their family. Majority of the respondents who used home made pads and old clothes were found to reuse them. 76.3% of the respondents experienced pain during menstruation. 25.7% used self prescribed medicine and only 16.4% visited the doctor. The finding also revealed that only 22.9% respondents received information about RH from radio/TV and 12.6% from their parents. There was significant association (p=0.000) between the age of the respondents and knowledge on RH. Association between the education of mothers and discussion of RH related issues in the family was also found to be significant (p=0.029). Similarly, there was significant association (p=0.002) with respondents' knowledge on RH and practice of using sanitary pads.

**Key Words:** Reproductive health care; Adolescent girls

## Introduction

Adolescence is the period of physical and social maturing from childhood to adulthood. Adolescent reproductive health is one of the most important components of reproductive health (RH) .It is the baseline pillar of the total reproductive human life. The students of secondary and higher secondary level are in highly transitional period of physiological and social change. Awareness on reproductive and sexual health care will lead to economic development by preventing the highly pandemic disease like HIV /AIDS.p-

In Nepal very less attention has been given to this issue. In Kathmandu, most of the adolescents are engaged in study. The rapid urbanization, advanced mass media, changing cultural values and the norms are the predisposing factors that make the health of adolescent quite complex[1]. Thus to promote the reproductive health knowledge and practice of adolescent girls needs, there should be proper information, education, counseling and advocacy[2]. The present study tried to reveal a clear picture of the existing knowledge and practice on reproductive health of adolescent school girls of Khadka Bhadrakali VDC. This type of study has not been done before in this area.

## Materials and Methods

The present descriptive cross-sectional study was carried out in selected secondary school in Khadka Bhadrakali VDC Kathmandu, Nepal from September 2007-December 2007. Data were obtained through pre-tested semi-structured questionnaire among purposively selected 240 adolescent girls of government schools of Kathmandu.

## Results

The findings of the study regarding sociodemographic, socioeconomic and their associations with level of knowledge and practice on reproductive health (RH) are presented in tabular form.

**Table 1. Distribution of the respondents by socio-demographic characteristics (n=240)**

| Socio-demographic variables | Frequency | Percentage |
|---|---|---|
| **Age of respondents (in years)** | | |
| <15 | 85 | 35.4 |
| 15-16 | 126 | 52.5 |
| 17+ | 29 | 12.1 |
| **Level of education of the respondents** | | |
| Grade 8 | 64 | 26.7 |
| Grade 9 | 76 | 31.7 |
| Grade 10 | 100 | 41.7 |
| **Father's Education** | | |
| Illiterate | 35 | 14.6 |
| Primary | 94 | 39.2 |
| Secondary | 70 | 29.2 |
| Secondary passed | 21 | 8.8 |
| Higher Secondary Passed | 20 | 8.3 |

Findings show that majority of the respondents were in the age group 15-16 (52.5%) years with mean age of 14.97 years and standard deviation of ± 1.477 (Table 1). Respondents belonged to grade 10 were 41.7% followed by grade 9 (31.7%) and grade 8 (26.7%). The study revealed that highest percentage of the respondents' father had primary level (I-IV) education (39.2%) and only 8.3% had Higher Secondary level education (Table 1).

**Table 2. Distribution of the respondents by socio-demographic characteristics**

| Socio-demographic variables | Frequency | Percentage |
|---|---|---|
| **Mother's Education** | | |
| Illiterate | 92 | 38.3 |
| Primary | 102 | 42.5 |
| Secondary | 28 | 11.7 |
| Secondary Passed | 13 | 5.4 |
| Higher Secondary Passed | 5 | 2.1 |
| **Total monthly income of family** | | |
| <5000 | 118 | 49.2 |
| 5000-9999 | 69 | 28.8 |
| 10000-14999 | 38 | 15.8 |
| 15000+ | 15 | 6.3 |

Regarding the level of education of the respondents' mothers, 42.5% had passed primary education, 38.3% were illiterate, 11.7% had secondary level education 5.4% secondary passed and only 2.1% had higher secondary level education (Table 2). The Mean monthly income was 6582.50±3750.507 NRs (Table 2).

**Table 3. Association between mothers' education and discussion of RH related issues in family.**

| Mothers' education | Discussion of RH related issues in family | | | | Total | |
|---|---|---|---|---|---|---|
| | No | | Yes | | | |
| | N | % | N | % | N | % |
| Illiterate | 44 | 18.3 | 48 | 20 | 92 | 38.3 |
| Literate | 92 | 38.3 | 56 | 23.3 | 148 | 61.7 |
| Total | 136 | 56.7 | 104 | 43.3 | 240 | 100.0 |

$\chi^2 = 4.784$, P=0.029, df=1

Findings suggest that among the family with illiterate mothers, 20% of the respondents had discussion of reproductive health related issues and 18.3% did not have any discussion while among the family with literate mothers, 38.3% of the respondents did not have any such discussion and 23.3% had discussion regarding RH issues in their family. This was found statistically significant (p=.029) that means there was association between mothers' education and discussion of RH related issues in the family (Table 3).

**Table 4. Association between age of the respondents and knowledge on RH**

| Age of the respondents | Level of knowledge on RH | | | | Total | |
|---|---|---|---|---|---|---|
| | Poor knowledge | | Good knowledge | | | |
| | N | % | N | % | N | % |
| Below 15 years | 54 | 22.5 | 31 | 12.9 | 85 | 35.4 |
| Above15 years | 47 | 19.6 | 108 | 45.0 | 155 | 64. |
| Total | 101 | 42.1 | 139 | 57.9 | 240 | 100.0 |

$\chi^2$=24.836, p=0.000, df= 1

Table 4 suggests that the respondents below the age of 15 were found to have poor knowledge on RH issues while with the increase of age i.e.15 or above 15 years, the knowledge seemed to increase. This was found statistically significant (p=.000) that means there was strong association between age of the respondent and knowledge on the RH issues.

**Table 5. Association between knowledge of RH and use of sanitary pad**

| Level of knowledge | Use of sanitary pad | | | | Total | |
|---|---|---|---|---|---|---|
| | Using sanitary pad | | Not using sanitary pad | | | |
| | N | % | N | % | N | % |
| Poor knowledge | 16 | 6.7 | 85 | 35.4 | 101 | 42.1 |
| Good knowledge | 47 | 19.6 | 92 | 38.3 | 139 | 57.9 |
| Total | 63 | 26.3 | 177 | 73.8 | 240 | 100.0 |

$\chi^2$=9.759, p=.002, df=1

The association between the knowledge of the respondents and practice of using sanitary pad during menstruation. It was found out that the practice of using sanitary pads had increased with the increased level of knowledge. The association was statically significant (p=0.002) that means there was strong association between the level of knowledge and practice of using sanitary pads.

## Discussion

The sociodemographic structure of adolescents was in accordance with national figures.[3] In the present study only 36.3% had knowledge about the reproductive organs but out of them very few could name the organs correctly. Majority of the respondents (76.3%) had their first menstruation at the age between 12-14 years. In a study done among the adolescent girls of Punjab, India, it was seen that majority of the sample (76%) had experienced menarche at the age of 12-14 years.[4] The results are exactly similar.

In a study done in Nepal[5], less than a sixth respondent in Mahottari said that the occurrence of menses was a healthy sign in girls (to remain healthy). Likewise, over a fourth of respondents in Mahottari and a sixth in Baglung perceived menstruation as a natural process. In present study, it was found out that 55.4% said the cause of menstruation was normal hormonal fluctuation while 20.8% seemed to have no knowledge about it. This shows that different perceptions are existing in different societies regardless of the actual cause.

In a study conducted in Bangladesh[6], it was found that all the respondents had heard about AIDS. In this study, almost all (97.5%) had heard about it. The findings were similar.It[6] also revealed that 36.7% of the respondents said that AIDS is transmitted from an infected mother to her baby during pregnancy. In this study, 84.6% were found to know about the way of such transmission. This difference may be because the studies were from two different places. Regarding the preventive measures of AIDS[6], 90% said avoiding unprotected sex, 64% said screening of blood, and 50% said using condom and using disposable syringes. In my study, regarding the knowledge on the prevention of the HIV/AIDS 30.4% said that the best way to prevent was to have the safe sex practice followed by 28.9% who said using condoms were effective while 22.3% said avoiding contaminated needles and syringes would help and only 18.4% said screening the blood. So, while comparing the results, the responses were found to be similar. Similarly, in the study[6] regarding high risk group for contracting AIDS, majority (95.7%) said sex workers. This study revealed the same findings i.e. highest percentage (44.6%) responded that the high risk group was sex workers.

Since women are marginalized in Nepalese society, they lack access to information and services; many do not feel comfortable discussing about their

reproductive health concerns with parents. Majority of the respondents (56.7%) said that they do not discuss about reproductive health issues in their family. There are still so many cultural restrictions in Nepal. In a study conducted in Nepal[7], most of the respondents did not enter the place of worship (73%) and did not enter the kitchen (78%) during menstruation. Similarly, in my study, majority (62.5%) had restrictions for performing some daily chores during menstruation. Out of them 65.6% were not allowed to cook, 16.1% not going to school, 13.3% for washing clothes and 5% others (e.g. praying to God).

Regarding maintenance of hygiene during menstruation, only 26.3% used sanitary pad, 47.5% used home made pad and 26.3% used old clothes. Only 35.8% disposed it, 51.3% reused it after washing with soap and water while 12.9% reused by washing with only water. In a similar study in Bangladesh, (97%) adolescent girls were found to use clean pad/cloth or cotton during menstruation.[4] This indicates that the practice of using sanitary napkins is less. The good and poor knowledge on RH were found to be 57.9% and 42.1% respectively. Association was seen (p=0.029) between the education of mothers' and discussion of RH related issues in the family. Similar findings were observed in a study in Bangladesh.[4] However, the discussion in the family with literate mothers was found to be less. Similarly, marked association (p=0.000) was seen between the age of the respondents and level of knowledge on reproductive health. A study by Regmi et al (2004) shows likelihood associations.[8] Those above 15 years had good knowledge and knowledge level was poor with the decrease of age. There was significant association (p=0.002) with respondents' knowledge and practice of using sanitary pads. A study by Acharya M (1998) shows the correlation of hygienic practices with education level.[9] In the present study it was seen that the practice of using sanitary pad increased with the increased level of knowledge of the respondents.

## Conclusion

The good and poor knowledge on RH were found to be 57.9% and 42.1% respectively. It was seen that majority of the respondents (56.7%) had no discussion about reproductive health related issues in their family. The level of knowledge increased with the age of the respondents. The use of sanitary pads during menstruation increased with the level of knowledge of the respondents. 22.9% respondents received information about RH from radio/TV and only12.6% from their parents. Strong association was seen (p=0.029) between the education of mothers' and discussion of RH related issues in the family. Similarly, marked association (p=0.000) was seen between the age of the respondents and level of knowledge on reproductive health. There was significant association (p=0.002) with respondents' knowledge and practice of using sanitary pads.

## Recommendations

Adolescent should be made aware of taking medicines only with the prescriptions of doctors, and of menstrual hygiene practice. Awareness programs should be formulated so as to encourage discussions regarding RH issues in the family. RH may be included in the school curriculum in such a way that it fulfils the information needed by the adolescents. Further studies in such issues should be conducted in large scale.

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