

Knowledge and Practice of Genital Health and Hygiene among Adolescent Girls of Lalitpur Metropolitan City, Nepal

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Received June 14, 2019; Revised July 16, 2019; Accepted July 28, 2019

Abstract Introduction: The problem related to genital hygiene is inadequately known and has not acknowledged proper attention during the phase of adolescence which distresses the health of the girls and there is an increased susceptibility to reproductive tract infections and pelvic inflammatory diseases and other complications. The objective of this study was to assess the knowledge and practice of genital hygiene among adolescent girls at Lalitpur Metropolitan City, Nepal. **Methodology:** A school based cross-sectional study design was employed in Lalitpur Metropolitan City, Nepal. A multi-stage sampling technique was used to select 400 female high school students. Data collection was carried out from July 04 to July 30, 2018 using a pre- tested, structured questionnaire. The data were analyzed in SPSS for Windows version 22.0. Bivariate and multivariate logistic regression analysis was done at 95 % confidence interval. **Findings indicate:** The 37 (9.3%) respondents had good knowledge and 101 (25.3 %) practice of genital hygiene respectively. A significant positive association between good knowledge of genital health with that of exposure to social media [AOR = 2.60, 95 % CI: 1.28-5.28] was demonstrated. Girls who had experienced burning sensations were significantly associated with poor knowledge score [AOR. (C.I.) 2.62(1.05-6.51)] and girls who had experienced vaginal discharge were nearly three times more likely to have poor knowledge about genital hygiene [AOR = 3.07, 95 % CI: 1.41-6.66]. Girls who had experienced itching in genital area were 2.12 times more likely to have poor practice about genital hygiene compared to those who had not experienced itching. [AOR. (C.I.) 2.12(1.25-3.89)]. **Conclusions:** The findings showed that the adolescents had inadequate knowledge which had led to poor genital hygiene practices. Awareness regarding the need for information about good genital hygiene practices is very important.

Keywords: knowledge, practice, genital, hygiene, adolescent girls, social media

Cite This Article: Sanjeev Kumar Shah, Shristy Shrestha, Purna Laxmi Maharjan, Kshitij Karki, Abinash Upadhayay, Suraksha Subedi, and Milan Gurung, "Knowledge and Practice of Genital Health and Hygiene among Adolescent Girls of Lalitpur Metropolitan City, Nepal." *American Journal of Public Health Research*, vol. 7, no. 4 (2019): 151-156. doi: 10.12691/ajphr-7-4-4.

1. Introduction

Every year, approximately 100 million women worldwide are exposed to genital infections which can result in vaginitis, cervicitis, and urethritis, and trichomoniasis associated with adverse pregnancy outcome [1,2]. Bacterial vaginosis is the most common cause of vaginal symptoms among women and vaginal candidiasis is the second most common type of vaginal infection after bacterial vaginal infections, which affects weakened immune systems people [3].

Genital hygiene is the major factor for protection of reproductive health. Infection can occur with reduced

acidity, poor menstrual hygiene, the use of reusable cloth, personal unhygienic practices, keeping the genital area moist, using contaminated towels, and using tight and non-absorbent underwear [1,4].

Poor menstrual hygiene is a risk factor for reproductive tract infections. In many communities, adolescent girls are performing harmful practices using unclean materials, insertion of unclean materials into the vaginal canal, use of highly absorbent tampons, frequent vaginal douching, and lack of hand-washing [1,5]. Common products and practices included vaginal/genital moisturisers, anti-itch creams, feminine wipes, washes, suppositories, sprays, powders, and waxing and shaving pubic hair resulted in three times higher odds of reporting an adverse health condition [6].

Insufficient education of women, marriage at early ages, insufficient health services, absence of social security, inferior social status, extreme fecundity and associated gynecologic problems, false beliefs and incorrect applications to genital health are the underlying causes of reproductive health problems in women [7]. There is relationship between the symptoms of vaginal discharge and various socio-cultural based beliefs as adolescent girls in low and middle-income countries are often uninformed and unprepared for menarche which leads unhygienic practices during menstruation [8].

In a country like Nepal, the topics of genital health and reproductive health are not freely discussed in society. People feel uncomfortable talking about this in public. Due to taboos and social belief, parents hesitate to discuss this with their adolescent daughters. As a result, adolescent girls are not well aware and they have a limited understanding and practices regarding their genital health, which leads to poor hygiene [9,10,11]. This increases susceptibility to urinary, vaginal, and pelvic infections. [4]

2. Methodology

2.1. Study Design, Setting and Participants

A school-based, cross-sectional study was employed from July 04 to July 30, 2018 among high school female adolescents in Lalitpur Metropolitan City, Lalitpur. The girls who attained menarche were included for the study. Girls with visual impairment and those who were critically ill and incapable to provide informed consent were excluded from the study.

2.2. Sample size and Sampling Procedures

The sample size was determined using a formula for estimation of single population proportion with the assumption of 95% confidence interval, 5% margin of error, and prevalence of knowledge about genital health at 54.1% [6], and design effect of 2. To compensate for the non-response rate, 5% of the sample was added up on the calculated sample size and the final sample size was found to be 400.

Multi-stage random sampling was adopted for this study. In the first stage, a list of the higher secondary schools in Lalitpur Metropolitan City was compiled from the National Examination Board of Nepal. In the second stage, four high schools were selected by simple random sampling method (lottery method) from the list of colleges in Lalitpur Metropolitan City. Each school was further stratified by their streams and selected representative numbers of students. The sample size was allocated for each selected school using population proportion to the sample, size being the number of students in each high school (11th and 12th grade). Finally, the proportional number of participants (students) was selected by simple random sampling technique. The sampling frame was obtained from the student registration books of the respective schools. In the third stage, the number of female students was drawn randomly by lottery method from each streams of the respective college.

2.3. Data Collection Procedures

To collect data, self-administered questionnaires were employed. After reviewing the relevant literature, questionnaires were adapted and modified [14-19]. The questionnaire was prepared in the English language and translated into Nepali (the official language) and then translated back to English by other people who are proficient in both languages to maintain the consistency and content of the questionnaire. Pre-testing was done in 10% of the total sample in a similar setting and required correction was made accordingly. Rechecking and verification of internal consistency of responses on the same day of the data collection was done.

Students' genital health knowledge score was calculated out of the 10 knowledge specific questions (Table 2). Each correct response earned one point, whereas any wrong or 'don't know' response attracted no mark and thus the sum score of knowledge was calculated (10 points). Accordingly, the mean score of genital health knowledge (6.7 ± 1.46) was used to decide the cutoffs of the rank. Good knowledge of genital health was given to those respondents who scored 8-10 points and poor knowledge of genital health was given to those respondents who scored 0-7 points.

The students' practice of genital hygiene score was calculated out of the practice specific questions (Table 3). Each correct response earned one point, whereas any wrong or 'don't know' response attracted no mark. The sum score of practice was calculated (10 points). Where, the mean score of practice of menstrual hygiene (6.1 ± 1.69) was used to decide the cutoffs of the rank. Good practice of menstrual hygiene was given to those respondents who scored 7-10 points and Poor practice of menstrual hygiene was given to those respondents who scored 0-6 points.

2.4. Data processing and statistical analysis

Each completed questionnaire was coded on a pre-developed coding sheet by the principal investigator to minimize errors. Data were entered using the Epi-data 3.1 statistical program. Then the data were exported to SPSS Windows version 22.0 for analysis. The descriptive analysis including proportions, percentages, frequency distribution and measures of central tendency were done. Initially, bivariate analysis was performed between the dependent variables (Knowledge and practice of genital hygiene) and each of the independent variables (Sociodemographic variables, Genito-urinary tract related problems). Their odds ratios (OR) at 95% confidence intervals (CI) and P-values were obtained to identify important candidate variables for multivariate analysis. All variables found to be significant at bivariate level (at P-value < 0.05) were entered in to multivariate analysis using a logistic regression model in order to control for confounding factors.

2.5. Ethical Considerations

Ethical clearance and permission were obtained from the National Open College Institutional Research Review Board. Permission was secured from each high school through a formal letter. School Directors and Directresses were briefed on the relevance and objectives of the study. The purpose of the study was explained to the students

and written informed consent was obtained from each participant. For those students who were under the age of consent, informed verbal consent was obtained from their parents and assent from the students. Confidentiality of information was maintained by omitting any personal identifier from the questionnaire. Students were informed of their full right to skip or ignore any question or withdraw from their participation at any stage.

3. Findings

Table 1: The majority of the respondents belonged to the science stream (60.8%). The majority of respondents were Hindu (75.5%) by religion followed by Buddhist (14.5%), Christian (4.3%), Kirat (3%) and Islam (2.8%). Newar was the major ethnic group (32.5%). While, others such as Rai, Magar, Sherpa was the second major ethnic group (24.5%). Chhetri was the third major ethnic group (21.8%). The majority of respondent's fathers were engaged in business (51%). While, 33.3% of fathers were engaged in service, followed by engineer (6.5%), teacher (5.3%) and least were doctors (4%). The majority of respondents' mothers were homemaker (68.8%). Among 400 participants, only 204 stated their average family income. Majority of them (32.3%) had NRs.10,000-NRs.50,000 monthly family income with the mean NRs. 62632.35. The majority of the respondents belonged to a nuclear family (76.5%) and remaining lived in a joint family (23.5%).

Table 1. Finding related to socio-demographic characteristics of respondents

Variables	Frequency (n=400)	(%)
Age Group		
15-17 yrs	342	85.5
17-19 yrs	58	14.5
Stream		
Science	243	60.8
Non-Science	157	39.2
Religion		
Hindu	302	75.5
Non-Hindu	98	24.5
Caste		
Non-Marginalized	161	40.25
Marginalized	239	59.75
Mother's Occupation		
Home-maker	275	68.8
Working	125	31.2
Family Structure		
Nuclear	306	76.5
Joint	95	23.5
Exposure to social media regarding genital hygiene		
Yes	164	41.3
No	236	58.7

Table 2: Among 400 respondents, 97% had information about genital health while 3% did not have information about genital health. The majority responded with the correct answer for the question (90.8%) responded to for good vaginal health as the essentiality of good genital health. Only 17.5% correctly answered the perfect environment for good bacteria to grow. 84.8% answered irritation and infection as a consequence of not cleaning the genitals, whereas 3.8% did not know the answer. 90% of girls responded to be free from disease and infection

while 4.5% did not know the answer. Only 37.5% of girls correctly responded (drying genital area is important because moisture makes bacteria breed faster). Only 18% of girls were successful in answering the normal pH of vagina i.e. 3.8-4.5.

Table 2. Findings related to knowledge of genital health

Variables	Frequency (n)	%
1) Information on genital hygiene		
Yes	388	97
No	12	3
2) Information on perineal cleaning and vaginal discharge		
Yes	314	78.5
No	86	21.5
3) Importance of genital hygiene		
To be free from bad odor	8	2
To be free from disease and infection	360	90.0
To feel beautiful and confident	14	3.5
Do not know	18	4.5
4) Essentiality of good health		
For good vaginal health	363	90.8
For feeling beautiful	6	1.5
For being confident	16	4.0
Do not Know	15	3.8
5) Source of menstrual blood		
Uterus	225	56.3
Bladder	15	3.8
Vagina	86	21.5
Abdomen	7	1.8
Do not know	67	16.8
6) Cause of menstruation		
Hormone	376	94.0
Caused by disease	0	0
Curse from God	8	2.0
Do not know	16	4.0
7) Perfect Environment for bacteria		
Slightly acidic vagina	70	17.5
Neutral environment	93	23.3
Highly acidic environment	19	4.8
8) Consequence of not cleaning genital area *		
Causes irritation and infection	339	84.8
Foul odor from vagina	154	38.5
Spread of disease	141	35.3
Do not know	15	3.8
9)Importance of drying genital area		
Moisture makes bacteria breed faster	150	37.5
Moisture keeps bacteria healthy	28	7.0
To feel clean and dry	174	43.5
Do not know	48	12.0
10) Normal pH of vagina		
3.8-4.5	72	18
4.7-7	45	11.3
5-6	18	4.5
Do not know	265	66.3
Knowledge (summary index)		
Poor knowledge	363	90.8
Good knowledge	37	9.3

*Multiple responses.

Table 3: Only 60% of the participants had a habit of regularly cleaning their genital area. Half of the participants (51.3%) used both front to back and back to front direction for cleaning their genital area. The 58.3% responded to before and after using bathroom as their time of washing hands after perineal cleaning. The majority of the participants wore cotton underwear (74.4%) and the majority of respondents practiced sundry method to dry their underwear. Only 61.8% changed their underwear every day.

Table 4: Girls who were exposed to social media were two times more likely to have good knowledge about genital hygiene compared to those who were not exposed to social media [AOR = 2.34, 95 % CI: 1.17– 4.67].

Table 5: Socio-demographic characteristics of respondents with that of practice score were not found to be statistically significant.

Table 6: 79% of the girls complained of itching in the genital area, 24.7% reported burning sensation during micturition and 38% of girls complained of white discharge from vagina. Burning sensation significantly associated with poor knowledge score [AO.R. (C.I.) 2.62(1.05-6.51)] and the girls who had experienced vaginal discharge, nearly three times more likely to have poor knowledge about genital hygiene compared to those who had not experienced vaginal discharge [AOR = 3.07, 95 % CI: 1.41– 6.66].

Table 3. Findings related to practice of genital hygiene

Parameters of practice	Number (%)
1) Clean external genitalia after using bathroom	240 (60)
2) Clean external genitalia from front to back	135 (33.8)
3) Changes underwear everyday	247 (61.8)
<i>Types of underwear</i>	
Cotton	297(74.7)
Synthetic	17(4.3)
Nylon and synthetic	38(9.5)
Silk	52(13)
Do not know	75(18.8)
4) Dry underwear in sunlight	346 (86.5)
5) Uses commercially made sanitary pad as absorbent material during menstruation	389 (99.5)
6) Changes pad every 6 hour during menstruation	252 (63)
7) Cleans external genitalia with water and soap during menstruation	239 (59.8)
wash hands before and after using bathroom during perineal cleaning	233(58.25)
8) Bath daily during menstrual period	176 (44)
9) Remove pubic hair	150 (37.5)
10) Dry genital area after using toilet	149 (37.3)
Practice (summary index)	
Good practice	101 (25.3)
Poor practice	299 (74.8)

Table 4. Finding related to socio-demographic characteristics of respondents with that of knowledge.

Variables	Good Knowledge	Poor Knowledge	OR (CI)	Adjusted OR (CI)
Family Structure				
Nuclear	24 (7.8%)	282 (92.2%)	1.86	
Joint	13 (13.8%)	81 (86.2%)	(0.91-3.86)	
Exposure to social media regarding genital hygiene				
Yes	22 (13.6%)	140 (86.4%)	2.41	2.34
No	15 (6.3%)	223 (93.7%)	(1.20-4.84)	(1.17-4.67)**

Key = **statistically significant (p-value <0.05).

Table 5. Finding related to socio-demographic characteristics of respondents with that of practice.

Variables	Good Practice	Poor Practice	OR (CI)
Age Group			
15-17 yrs	87 (25.4%)	255 (74.6%)	1.01
17-19 yrs	14 (24.1%)	44 (75.9%)	(0.51-1.98)
Stream			
Science	65 (26.7%)	178 (73.3%)	0.89
Non-Science	36 (22.9%)	121 (77.1%)	(0.54-1.45)
Religion			
Hindu	80 (26.5%)	222(73.5%)	0.87
Non-Hindu	21 (21.4%)	77 (78.6%)	(0.49-1.57)
Caste			
Non-Marginalized	49 (30.4%)	112 (69.6%)	0.65
Marginalized	52 (21.8%)	187 (78.2%)	(0.40-1.06)
Mother's Occupation			
Home-maker	70 (25.5%)	205 (74.5%)	0.93
Employed	31 (24.8%)	94 (75.2%)	(0.56-1.53)
Family Structure			
Nuclear	75 (24.5%)	231 (75.5%)	1.22
Joint	26 (27.7%)	68 (72.3%)	(0.72-2.07)
Exposure to social media regarding genital hygiene			
Yes	67 (28.2%)	171 (71.8%)	0.69
No	34 (21.0%)	128 (79.0%)	(0.42-1.11)

Table 6. Association of Knowledge with Experiences of Genito-urinary tract related problems of the Adolescent Girls

Problem in genital area	Frequency n (%)	Good Knowledge	Poor Knowledge	Crude OR (CI)	Adjusted OR (CI)
Itching	115 (78.8%)	8 (7.0%)	107 (93.0%)	3.01 (0.69-12.88)	
Burning sensation	36 (24.7%)	7 (19.4%)	29 (80.6%)	0.23 (0.59- 0.96)*	2.62 (1.05-6.51)*
Foul odor	29 (19.9%)	5 (17.2%)	24 (82.8%)	0.71(0.16-3.16)	
Vaginal discharge	55 (37.7%)	11(20.0%)	44 (80.0%)	0.17(0.04- 0.74)	3.07 (1.41-6.66)**
Sore	2 (1.4)	1 (50.0%)	1 (50.0%)	0.09 (0.004-2.36)	
Total	147 (36.8%)	14 (9.5%)	133 (90.5%)	2.55(0.53- 12.10)	

Key = **statistically significant (p-value <0.05).

Table 7. Association of Practice with Experiences of Genito-urinary tract related problems of the Adolescent Girls

Problem in genital area	Frequency n (%)	Good Practice	Poor Practice	OR (CI)	Adjusted OR (CI)
Itching	115 (78.8%)	18 (15.7%)	97 (84.3%)	3.43 (1.20-9.81)*	2.12 (1.25-3.89)*
Burning sensation	36 (24.7%)	9 (25.0%)	27 (75.0%)	0.524 (0.19-1.44)	
Foul odor	29 (19.9%)	2 (6.9%)	27 (93.1%)	3.55 (0.71-17.56)	
Vaginal discharge	55 (37.7%)	10 (18.2%)	45 (81.8%)	1.80(0.64-5.05)	
Sore	2 (1.4)	2 (100.0%)	0		
Total	147 (36.8%)	31 (21.1%)	116 (78.9%)	0.49 (0.16-1.48)	

Key = *statistically significant (p-value <0.05).

Table 7: 79% of the participants complained of itching in genital area and girls who had experienced this were 2.12 times more likely to have poor practice about genital hygiene compared to those who had not experienced itching. [AO.R. (C.I.) 2.12(1.25-3.89)].

4. Discussion

In this study, 9% of participants had good knowledge and 25% good practice of genital hygiene, but the findings related on knowledge on reproductive health was 40.7% and practice of menstrual hygiene was 46.7% which was conducted in rural Nepal. The possible influent factors may be that awareness campaign are being more focused on menstrual hygiene and menstrual products as well as people are hesitate to share information regarding genital hygiene [11]. Exposure to social media was an important predictor of menstrual hygienic knowledge [10]. More than two-third of participants were aware of the menstruation as a physiological process but only 21% of girls were aware that blood flows from the vagina, which is significantly lower than findings from other studies done in rural Nepal [10].

In this study, 60% of girls washed their genital area quite often which seems quite similar to study conducted in India (2015) found 62.4% of the girls washed their external genital area [5] Another study conducted in India in 2015 showed that 75.9% of the girls washed their vagina quite often [5]. Washing the genital area more than once a day or using different commercial products may increase risk for infection by disturbing the genital flora and is therefore not suggested by the International Society for the study of Vulvovaginal Disease [12].

The 33.8% girls used front to back direction while cleaning their genital area which shows differences in a study conducted in Turkey (2016), where 67.8% girls favored front to rear genital cleaning [15]. But a study done in Istanbul (2017) have similarities which revealed that 33.3% favored cleaning their genital from front to back [13]. It has been described by the previous studies

that incorrect perineal hygiene practices (back to forward) may lead to infections due to the transfer of microorganisms from the anus to the vagina [12,14].

In a study done in Turkey (2016), 93.4% girls preferred cotton underwear and 47.2% changed their underwear daily [15] which is quite similar to a study done in Istanbul which revealed that 50.3% of the girls changed their underwear daily [8]. 42% of girls changed their underwear every two days or over [13]. Hamed found that 53.4% of the women changed their underwear every 2-3 days and demonstrated a higher incidence of vaginitis for this group compared to those who changed underwear daily [1].

Changing the underwear frequently is critical in preventing genital and urinary infections. The underwear may be changed even multiple times throughout the day during the period of intensive discharge [1,19,20]. It was observed that in this study, 61.8% changed their underwear everyday, 86.5% of the girls dried their underwear in sunlight and 74.7% of girls preferred cotton underwear. In this respect [10,21] emphasized that after cleaning, the genital area should be dried to avoid a wet environment which facilitates growth of microorganisms.

A study conducted in Ethiopia (2017) showed that 45.2% of the girls dried their underwear in sunlight and 51.9% changed their underwear every day [4]. It was observed that 36.8% experienced problems in their genital area (78.8%), itching (37.7%), vaginal discharge (24.7%) burning sensation and foul odour (19.9%) which have similarities with a study conducted in India (2017) one third of the patients had symptoms of problems in their genital area such as 34% vaginal discharge and 28% burning micturition [16].

In this study, 99.5% of the girls believed that sanitary pads are the best absorbent material to be used to soak menstrual bleeding with only 7.4% of girls preferring to tampons which have similarities with the study conducted in India [5] where 90.5% of girls used sanitary pads and 9% of the girls used tampons during menstruation. Comparing the studies done in Ethiopia [16,20] i.e. 82.2% girls, South India [21] i.e. 68.9% girls and Saudi Arabia [22] i.e. 98.3% of girls used sanitary pad as the best absorbent material to soak menstrual blood.

In this study, 63% of girls changed their pads every six hours a day whereas 12.5% changed their pads as required which differs from a study done in Nepal (2013) that showed 50.8% of girls changed their pads twice a day [11]. Similarly, study done in Turkey (2015) revealed that 54.1% of girls changed their pads twice a day [15] and study done in Istanbul (2017) showed that 44% of girls changed their pads twice a day [23].

5. Conclusions and Recommendations

The present study revealed that the occurrence of genital irritation was higher among adolescents with incorrect genital hygiene habits. Principles of correct genital hygiene are not adequately known among the adolescents. Awareness programs are required on genital hygiene, which is essential aspect of women's health. So, health education program should be setup to create awareness and practice of good genital hygiene.

Acknowledgements

The authors would like to express our authentic gratefulness to all respondents who had provided valuable information and kind cooperation in our research project. Similarly, we extend our sincere gratitude to Department of Public Health, National Open College, Pokhara University, Nepal. We thank Dr Mel Underwood, Associate Professor of Charles Darwin University, Australia for critical review of the manuscript. We thank Jennifer Mathias for providing valuable inputs in this research.

Funding

Not applicable.

Competing Interests

None declared.

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