Determinates of Factors Influencing Menstrual Hygiene during Menstruation among High School Going Girls Students of Kalaburagi District, Karnataka, India

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Abstract: This paper presents a study of practices of menstrual hygiene during menstruation among school going girls of five talukas of Kalaburagi district. The main objective of the study is to identify and analyze the most influencing hygiene factors using factor analysis. The significant of the hygiene factors with respect to five talukas were tested using the Chi-Square test of independence. For this study respondents were selected randomly from high schools of five talukas of Kalaburagi district viz: Aland, Jevargi, Sedam, Chitapur and Kalaburagi with 1500 respondents. In this study 14 hygiene factors were considered and most decisive hygiene factors were identified through factor analysis using SPSS package.

Key Words: Menstruation, Hygiene practices, Chi- Square Test, Factor Analysis, KMO and Bartlett's Test, Rotated Component matrix

1. Introduction

Assessing the menstrual hygiene practice level of females and addressing the gap is essential to reinforce safe and hygienic practice during menstruation. Practical challenges of menstrual hygiene practice are made even more difficult by socio-cultural factors and millions of girls continue behind the rights to have sufficient information about menstrual hygiene, water and sanitary health, education, dignity and gender equity. This may result to incorrect and unhealthy behavior during their menstrual period (Haile Anchebi, et al 2017). Good menstrual hygiene practices such as use of sanitary pads and adequate washing of genital areas are essential during menstrual period. Having a good menstrual practice will enhance the confidence of adolescent girls in much aspect. On the other hand, poor menstrual hygiene practices will susceptibility to reproductive health related problems.

Menstrual Hygiene is a neglected issue in rural India. Till now, the poor menstrual hygiene in developing countries has been an insufficiently acknowledged problem (P Seenivasan, et al 2016). Only few studies have included the detailed aspects of the menstrual hygiene practices among adolescent school going girls. It was therefore considered as relevant to investigate the menstrual related hygiene practices among the school going girls. Therefore, this study was conducted to assess the level of menstrual hygiene practice and associated factors among female high school students found in Kalaburagi district. The finding of this study will be helpful for school related health policy makers in understanding predictors of menstrual hygiene practice among high school female students and in designing the possible interventions.

2. Survey of Literature

Anna Maria van Eijk, M Sivakami, Mamita Bora Thakkar, Ashley Bauman, Kayla F Laserson, Susanne Coates, Penelope A Phillips-HowardAuthor affiliations (2015): In the paper "Menstrual hygiene management among adolescent girls in India: a systematic review and meta-analysis" they assessed the status of menstrual hygiene management (MHM) among adolescent girls in India. Data from 138 studies involving 193 subpopulations and 97 070 girls were extracted. Results reveals that in 88 studies, half of the girls reported being informed prior to menarche (PP 48%, 95% CI 43% to 53%, I^2 98.6%). Commercial pad use was more common among urban (PP 67%, 57% to 76%, I^2 99.3%, n=38) than rural girls (PP 32%, 25% to 38%, I^2 98.6%, n=56, $p<0.0001$), with use increasing over time ($p<0.0001$). Inappropriate disposal was common (PP 23%, 16% to 31%, I^2 99.0%, n=34). Menstruating girls experienced many restrictions, especially for religious activities (PP 0.77, 0.71 to 0.83, I^2 99.1%, n=67). A quarter (PP 24%, 19% to 30%, I^2 98.5%, n=64) reported missing school during periods. A lower prevalence of absenteeism was associated with higher commercial pad use in univariate ($p=0.023$) but not in multivariate analysis when adjusted for region ($p=0.232$, n=53). Approximately a third of girls changed their absorbents in school facilities (PP 37%, 29% to 46%, I^2 97.8%, n=17). Half of the girls' homes had a toilet (PP 51%, 36% to 67%, I^2 99.4%, n=21). The quality of studies imposed limitations on analyses and the interpretation of results (mean score 3 on a scale of 0–7).

Shabnam Omidvar, and Khyrunnisa Begum (2010): In the paper "Factors influencing hygienic practices during menses among girls from south India- A cross sectional study" the author express menstruation is a natural phenomenon among matured females who experience shedding of blood for 1-7 days every month from the age of maturity until menopause. Menstrual hygiene and management is an issue that is insufficiently acknowledged and has not received adequate attention. This study seeks to assess hygienic behavior of unmarried females aged 15 to 22 years and factors affecting their behaviors. A

cross-sectional study was conducted during 2009-10 on 350 students. They were recruited from educational institutions from a major city in South India. Demographic and menstrual history and hygiene questionnaires were used for obtaining required information. Statistical Packages for the Social Sciences (SPSS) for Windows version 16 was used. Descriptive statistics, Chi-sq and Fisher's exact tests were used for analysis. The analysis on results reveals that mean age of menarche was 13.4±1.2 years; disposable pads were used by two-thirds of the selected girls (68.9%) regardless of age while 45.1% reported to use both disposable and non disposable materials. Frequency of changing pads was 2-3 times a day by 78.3% girls. Socioeconomic Status (SES) of the selected girls and their age influenced choice of napkin/pads and other practices such as storage place of napkins; change during night and during school or college hours and personal hygiene. Older girls had better hygienic practices than the younger ones. Seventy six percent of the participants desired for more information regarding menstruation and hygienic practices.

3. Association between Menstrual Hygiene Factors and Talukas

This section aimed to test the association between 14 Menstrual Hygiene factors viz: Practicing hygiene, Able to afford sanitary napkin, Able to use sanitary napkin, Using cloth, Using new cloth every time, Changing absorbent often in a day, Cleaning cloth with sanitizers, Drying cloth outside the house, Disposing sanitary napkin in disposal bin, Rapping pad before disposing, Washing hands with soap/sanitizers, Marinating hygiene when in school, Changing the sanitary pads in a school, Taking bath when menstruating with respect to the respondents belonging to different talukas using Chi-Square test.

3.1 Association between the Factors of Hygiene Practices and Talukas of the respondents

H_0: There is no significant association between hygiene factors and talukas of the respondents

Table 3.1 Significance of Menstrual Hygiene Factors

Sl.No	Menstrual Hygiene Factors	Chi-Square test	P- Values
1	Hygiene practices	27.178	0.040
2	Able to afford Sanitary napkins	103.860	0.000
3	Able to use Sanitary napkin	71.902	0.000
4	Using cloth	27.969	0.032
5	Using new cloth every time	154.692	0.00
6	Changing the absorbent often in a day	27.111	0.040
7	Cleaning the cloth with sanitizers	33.249	0.007
8	Drying cloth outside the house	77.969	0.000
9	Disposing Sanitary napkins in disposable bin	77.606	0.000
10	Rapping pad before disposing	41.131	0.001
11	Washing your hands with Soaps/Sanitizers	50.281	0.000
12	Maintaining hygiene when you are in school	70.130	0.000
13	Changing the sanitary pads in a School	93.632	0.000
14	Taking bath when menstruating	83.040	0.000

Table 3.1 shows the measures of association between hygiene factors and respondents belonging to different talukas. Study reveals that the null hypotheses are rejected for all the factors of hygiene practices since the result is significant in all the cases. The significant values shows less than 0.05 in all the cases, which means that there is a significant association between the factors of menstrual hygiene practices and the respondents belonging to different taalukas.

4. Factor Analysis

After testing the association between menstrual hygiene factors and talukas of the respondents, the most decisive hygiene factors were identified through factor analysis using SPSS package. Factor analysis is technique that is used to reduce large number of variables into fewer numbers of factors. This technique extracts maximum common variance from all variables and puts them into a common score.

Factor analysis was used to construct new factors affecting practices of menstrual hygiene among the high school going students of 5 talukas of Kalaburagi district. Bartlett's test of Sphericity and the Kaiser- Mayo-Olkin (KMO) both test measure the sampling adequacy and that can be used to determine factorability of matrix as a whole. The results of Bartlett's test of Sphericity is significant ($p<0.001$, $P = 0.000$). In addition the KMO measure is 0.611 which is greater than 0.5, which indicates that the data is adequate.

Table 1 display the total variance explained at six stages of factors that affecting menstrual hygiene practices among girls of high school students. Six factors were extracted because there eigen values are greater than 1. When six factors were extracted, then 52.095 percent of the variance would be explained.

Table 4.1 Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.737	12.408	12.408	1.737	12.408	12.408	1.625	11.605	11.605
2	1.296	9.256	21.664	1.296	9.256	21.664	1.218	8.700	20.305
3	1.155	8.252	29.916	1.155	8.252	29.916	1.147	8.195	28.500
4	1.049	7.496	37.411	1.049	7.496	37.411	1.130	8.073	36.574
5	1.044	7.455	44.867	1.044	7.455	44.867	1.110	7.927	44.501
6	1.012	7.229	52.095	1.012	7.229	52.095	1.063	7.595	52.095
7	.953	6.807	58.902						
8	.940	6.711	65.614						
9	.897	6.407	72.020						
10	.878	6.268	78.289						
11	.863	6.161	84.450						
12	.815	5.819	90.268						
13	.746	5.329	95.597						
14	.616	4.403	100.000						

Extraction Method: Principal Component Analysis.

Table 2 shows the rotated component matrix for the hygiene factors. The variables with factor loadings which are grater then 0.5 were considered for further factor analysis. The factors with highly loaded (values greater than 0.5) are presented boldly in each component.

Table 4.2 Rotated Component Matrix[a]

	Component					
	1	2	3	4	5	6
PH_19	.233	.360	-.237	**.506**	.044	-.280
OSN_20	**.574**	-.060	.151	-.112	.061	.182
AUSN_21	**.734**	-.031	.043	.089	.036	-.151
UC_22	-.695	.176	-.060	-.037	.066	-.041
NEWC_23	-.136	**.582**	.021	-.029	.189	.096
CA_24	.123	.123	-.214	.096	.037	**.781**
CLNGCL_25	-.119	**.638**	.164	-.029	-.127	.030
DRYP_26	-.275	.331	.199	.209	-.028	.349
DISP_27	.186	.195	**.626**	-.010	-.143	-.035
RAPPING_28	.070	.022	**.643**	.058	.141	-.076
HW_29	.036	.002	.011	**.653**	-.043	.115
MHWS_30	.009	-.075	.167	-.118	**.761**	.226
CHNGS_31	.032	.170	-.172	.167	**.643**	-.332
BDMC_32	.230	.331	-.293	-.571	-.094	-.061

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 11 iterations.

The above rotated component matrix displays the factor loading for each item on each rotated component, which helps in better interpretation of factors. Looking at the above table, we can see that the factor changing absorbent often in a day is heavily loaded on component six. The factors able to use sanitary napkins and offered sanitary napkins are heavily loaded on component one. Maintaining hygiene when in school and changing absorbent in school are heavily loaded on component five. The factors washing hands with soap/ sanitizers and are you practicing hygiene are heavily loaded on component four. Disposing sanitary napkins in disposal bin and rapping pad before disposing are heavily loaded on component three. Using new cloth every time and cleaning cloth with sanitizers are heavily loaded on component two. The heavily loaded factor value in each column of component matrix are considered and tabulated in the following table 4.3 for factor loading values.
Since new factors were successfully added to factor analysis and assigned as the factors affecting the menstrual hygiene practices. Table 4.3 shows factors loading with factor loading values and name of the new factors.

Table 4.3 Factors loading values

Components	Factors name	Factors loading value	Factors name
1	Offered sanitary napkins	0.734	Support from family or by school
	Able to use sanitary napkins	0.574	
2	Cleaning cloth with sanitizers	0.638	Hygiene practices in using cloths
	Using new cloth every time	0.582	
3	Rapping pad before disposing	0.643	Disposal of absorbents
	Disposing sanitary napkins in disposal bin	0.626	
4	Washing hands with soap/ sanitizers	0.653	Use of sanitizers
	Practicing hygiene	0.506	
5	Maintaining hygiene when in school	0.761	Hygiene practices in school
	Changing absorbent in school	0.643	
6	changing absorbent often in a day	0.781	Number of time Changing absorbents in a day

From the table 4.3 it can be seen that, the first component support from family or school is heavily loaded by the factors able to use sanitary napkins, offered sanitary napkins respectively with values 0.574 and 0.734. Second component hygiene practices in using cloths are heavily loaded by the factors, using new cloth every time and cleaning cloth with sanitizers respectively with values 0.582 and 0.638. Third component disposal of absorbents is heavily loaded by the factors, disposing sanitary napkin in disposal bin and rapping pad before disposing respectively with values 0.626 and 0.643. Fourth component use of sanitizers is heavily loaded by the factors washing hands with soap/sanitizers and are you practicing hygiene with values 0.653 and 0.506. Fifth component hygiene practices in school is heavily loaded by the factors, maintaining hygiene when in school and changing absorbent in school are respectively with values 0.761 and 0.643 and sixth component is loaded by number of absorbents changing in a day with value 0.781.

5. Dissuasion and Conclusion

The results shows six new factors which were identified successfully using factor analysis and assigned as the factors affecting the practices of menstrual hygiene among girls of high school students. The new six factors are support from family and by school, hygiene practices in using cloths, disposal of absorbents, use of sanitizers, hygiene practices in school and number of time changing absorbents in a day.

For the hygiene management support from family or by the school play an important role for school going girls. The respondent's level of menstrual hygiene practices in changing absorbents often in a day, in using new cloth and cleaning them with sanitizers were not appraised. The study revealed that majority of the girl's students using old cloth as menstrual pads and that they reused after washing with soap and water especially in the rural areas. This may be due to their low socioeconomic status, lack of awareness and low level of mother education. The hygiene practices by the rural and urban school going

students is not satisfactory there is need to mobilize adolescent girls to use sanitary pads. Using new cloth every time and cleaning with sanitizers, rapping pads and disposing in disposal bin, washing hands with soap/ sanitizers and changing absorbents often in a day are the most important factors for the practices of menstrual hygiene.

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