

# Menstrual Hygienic Practices among Pubescent Girls and Reproductive Age Group Women in Kerala

Sheela S<sup>1</sup>, Rethesh KH<sup>2</sup>, Betsy A Jose<sup>3</sup>

## ABSTRACT

**Introduction:** Menstrual hygiene is fundamental to the dignity and wellbeing of women. Menstrual hygiene management refers to the ways adolescent girls and women keep clean during menstruation. Most women in third world countries use a set of clothes to absorb menstrual blood instead of commercial napkins. There is also lack of accessibility and affordability of sanitary products and facilities which are highly essential during menstruation. This study aims to gain knowledge on the proportion of pubescent girls and women with good menstrual hygienic practices in Kerala and factors related to it. The knowledge will help us to formulate policies to improve menstrual hygienic practices.

**Material and Methods:** The community based cross sectional study was conducted among 1200 women in the 10-45 year age group from six districts of Kerala selected by multi stage cluster sampling. Good menstrual hygienic practices were assessed using combined score of napkin frequency and napkin maintenance, with score  $\geq 20$  indicating good practice. The participant was considered to maintain good menstrual hygiene if the napkin frequency score was  $\geq 2$  and maintained the reusable sanitary material properly. The data was collected by house to house survey using a structured pre- tested questionnaire, administered in local language.

**Results:** In the present study 33.4% (95% CI: 30.7-36.1) had good menstrual hygienic practices. The Proportion of women with good menstrual hygienic practices across the selected districts were as follows; Thiruvananthapuram (61.5%), Alappuzha (50%), Kottayam (30 %), Palakkad (7.5%), Malappuram (21%) and Wayanad (30.5%). The predictors of good menstrual hygiene on doing multivariate analysis were favorable attitude, perceiving menstruation as natural, urban residence, good knowledge, early menarche, Christian religion and higher monthly spending on menstrual wear.

**Conclusion:** The study on menstrual hygienic practices on pubescent girls and women revealed that only 33.4% of the participants across the selected districts of Kerala had good hygienic practices. Higher proportions of adolescents (36.6%) had good practice, than women in the age group 20-45 years (31.7%)

**Keywords:** Menstrual Hygiene, Sanitary Napkin, Napkin Frequency, Napkin Maintenance, Age at Menarche etc.

## INTRODUCTION

Menstrual hygiene is fundamental to the dignity and wellbeing of women. Every women and girl is entitled to basic hygiene, sanitation and reproductive health services.<sup>1</sup> Menstrual hygiene management refers to the ways adolescent girls and women keep clean during menstruation and how they acquire, use and dispose their menstrual wears as often

as necessary with adequate privacy, having access to do so.<sup>22</sup> Globally 26% of the total population are in the reproductive age group and menstruate regularly.<sup>3</sup> Of these, 800 million women are in the developing countries where the gender development index are low.<sup>4</sup> Though a major biological event in a women's life it remained invisible in terms of maintaining hygiene and providing facilities to manage it. Women in developed nations use commercial disposable napkins and tampons as menstrual absorbents, while most women in third world countries use a set of clothes to absorb menstrual blood.<sup>5</sup>

A large majority of women in rural India use cloth that can be recycled as menstrual wear. Many are ignorant of the use of sanitary napkin. There is also lack of accessibility and affordability of sanitary products and facilities which are highly essential during menstruation.<sup>6</sup> Studies in Bangladesh, reports that the rags used to absorb blood were significantly associated with increased risk of infection.<sup>7,8</sup> Frequent changes of sanitary pads and maintenance of sanitary material are necessary to prevent infection.<sup>9</sup> The secure dry feeling that good absorbent pads provide improves the mobility and involvement of the woman activities during menstrual days and can help prevent infections.

This study aims to gain knowledge on the proportion of pubescent girls and women with good menstrual hygienic practices in Kerala and factors related to it. The knowledge will help us to formulate policies to improve menstrual hygienic practices.

## MATERIAL AND METHODS

The community based cross sectional study was conducted among 1200 women in the 10-45 year age group from six districts of Kerala selected by multi stage cluster sampling. Six districts, Thiruvananthapuram, Alappuzha, Kottayam, Palakkad, Malappuram and Wayanad, were selected at random. Four locations were selected at random from each

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district constituting 24 survey sites; 4 were municipalities (urban) and the remaining 20 locations were panchayats (rural). Five wards were randomly selected from each site and 10 households were chosen in each cluster.

Good menstrual hygienic practices were assessed using combined score of napkin frequency and napkin maintenance, with score  $\geq 20$  indicating good practice. The participant was considered to maintain good menstrual hygiene if the napkin frequency score was  $\geq 2$  and maintained the reusable sanitary material properly. The napkin frequency score was calculated by dividing the total number of pads used during a cycle by the number of days of bleeding and the maximum score was fixed at 4 and a score of  $\geq 2$  was considered good. The napkin used could be the commercial disposable one or any homemade cloth napkin.

To assess napkin maintenance a total of six questions were asked with a total score of 18. These questions related to reuse, number of cycles reused, method of washing, drying, ironing and storing of the material until next use. Commercial disposable napkin and single use of cloth were given the maximum score. A score less than 18 was deemed poor. A combined score of good napkin frequency and good maintenance totals up to 22 and a score of 20 is taken as cut off for good menstrual hygiene. A score less than 20 for menstrual hygiene is deemed as poor.

The determinants of good menstrual hygienic practices included socio demographic variables, menstrual history, perceptions, taboos, information, physical inconvenience, attitude, knowledge relating to menstruation, cost of menstrual wear and facilities available at home and work place. The menstrual history includes the age at menarche, length of menstrual cycles and number of days of bleeding.

The knowledge regarding menstruation was based on four

domains; physiology of menstruation, maintenance of menstrual hygiene, maintenance of health to prevent fatigue during menstruation and knowledge on morbidities caused by unhygienic menstrual practices. The total score was 28 and a score of 20 or above was considered good knowledge. The data was collected by house to house survey using a structured pre- tested questionnaire, administered in local language.

## RESULTS

The analysis includes the data of 1200 participants belonging to the age group 10-45 years in randomly selected districts of Kerala. Total of 1342 households were surveyed across the districts to interview 1200 eligible females

The mean age of the study population is 25.1 with SD of 9. One third of the study population is represented by adolescent age groups. Hindus constituted 54.7%, Christians 13.6% and Muslims 31. Among the participants 724 (60.3%) were OBC category and 207 (17.3%) belonged to SC/ST category. 654 (54.5%) of the participants were married. Most (59.2%) had 10<sup>th</sup> std or below education and only 116 (9.6%) were employed. (Table 1)

Mean age at menarche of study participants was 13.3 (SD 1.4). 79.25% had menstrual cycles once in 21 to 35 days. Mean number of days of bleeding was 4.8 (SD 1.3). (Table 2)

Among the participants 1005 (83.75%) had good toilet facilities at home and among the 600 respondents only 251 (41.8%) reported good facilities for maintenance of menstrual hygiene at institutions they needed to visit. Only 6.6% were satisfied with wayside toilet facilities. (Table 3)

Among the participants 677 (56.4%) were using commercial napkins and the rest 523 (43.6%) used cloths as absorbents. Only 479 (39.9%) used more than 2 pads per day. Maintenance of menstrual wear was found to be good in 715 (59.6%).

Factors	Category	Frequency	Percentage
Age category of the participants	10-14	123	10.3
	15-19	303	25.3
	20-24	201	16.8
	25-29	183	15.3
	30-34	166	13.8
	35-39	114	9.5
	40-45	110	9.2
Religion	Hindu	656	54.7
	Christian	163	13.6
	Muslim	381	31.8
Caste	SC	180	15
	ST	27	2.3
	OBC	724	60.3
	General	269	22.4
Marital status	Married	654	54.5
	Un-married	546	45.5
Educational status	SSLC & Below	711	59.2
	Above SSLC	489	40.8
Employment Status	Unemployed	1084	90.4
	Employed	116	9.6

**Table-1:** Demographic profile of the study participants (n=1200)

Factors	Category	Frequency	Percentage
Age at menarche in years	10-11	104	8.7
	12-15	1045	87.2
	15-18	51	4.25
Length of menstrual cycle	<21 days	177	14.75
	21-35 days	951	79.25
	>35 days	72	6.0
Number of days of bleeding	2	31	2.6
	3	169	14.1
	4	343	28.6
	5	326	27.2
	6	180	15.0
	7	151	12.6
Total		1200	100

**Table-2:** Menstrual History of study participants (n=1200)

Facility	Total No (N)	Frequency	Percentage	95% CI
House facility	1200	1005	83.75	81.7-85.8
Institution facility	600	251	41.8	37.9-45.8
Wayside facility	377	25	6.6	4.1-9.1

**Table-3:** Proportion of participant responses on Houses, institutions and wayside toilets with good facilities (n=1200)

Variables	Category	Number of participant n=1200	Percentage
Type of menstrual wear	Commercial napkin	677	56.4
	Cloth	523	43.6
Frequency of change of menstrual wear	≤2 pads per day	721	60.1
	>2 pads per day	479	39.9
Maintenance of menstrual wear	Good	715	59.6
	Poor	485	40.4
Disposal of menstrual wear N=1571	proper	1549	98.5
	improper	22	1.4
Reuse of cloth N=523	Yes	485	92.7
	No(single use)	38	7.3
Reuse cycle N=485	Use for only one cycle	40	7.6
	Use for 2 or 3 cycles	297	56.8
	Use for> 3 cycles	148	28.3
Method of washing cloth N=485	Use water only	35	7.2
	Using soap&water	450	92.8
Drying cloth N=485	On cloth line under direct sunlight	370	76.3
	On floor under direct sunlight	40	8.25
	In shade	75	15.5
Ironing of dried cloth N=485	Yes	51	10.5
	No	434	89.5
Storing of dry cloth N=485	Open space	18	3.7
	Dry storage space	461	95.1
	Kept scrolled	6	1.2
Napkin maintenance score N=523	<18	485	92.73
	18 optimum	38	7.27

**Table-4:** Components of menstrual Hygiene (n=1200)

MHP	Age group of participants		Total n=1200
	Adolescents (10-19)	Women (20-45)	
Good	156 (36.6)	245(31.7)	401(33.4)
Poor	270(63.4)	529(68.3)	799(66.6)

**Table-5:** Proportion of participants with good Menstrual Hygienic Practices (MHP) among pubescent Girls and women (n=1200)

District (N=200)	Age of participant		Total
	10-19	20-45	
Thiruvananthapuram	79(71.2)	76(56.7)	123(61.5)
Alappuzha	51(68)	49(39.2)	100(50)
Kottayam	11(16.9)	49(36.3)	60(30)
Palakkad	2(2.9)	13(9.8)	15(7.5)
Malappuram	11(16.9)	31(23)	42(21)
Wayanad	34(39.1)	27(23.9)	61(30.5)
Total	156(36.6)	245(31.7)	401(33.4)

**Table-6:** Proportion of pubescent girls and women with good menstrual hygienic practices across the different districts

Determinant	category	$\beta$	P value	Exp <sup>b</sup>	95%CI
Expenditure/ month	Rs19-100	3.49	<0.001	33.05	21.4-50.9
Religion	Christian	0.74	0.007	2.09	1.22-3.59
Age at menarche	<12 years	0.72	0.014	2.05	1.16-3.63
Knowledge	Good	0.72	<0.001	2.05	1.45-2.91
Residence	Urban	0.69	0.004	2	1.25-3.20
Perception	Natural	0.63	0.011	1.88	1.16-3.06
Attitude	Favorable	0.42	0.019	1.53	1.07-2.18

**Table-7:** Multivariate Analysis of Predictors of good menstrual hygiene

A majority of the cloth users reused it (92.7%) and 56.8% among them reused it for 2 or 3 cycles while 28.3% did so for more than 3 cycles. 450(92.8%) washed the cloth with soap and water and ironing of dried cloth was resorted to by 51(10.5%). The overall napkin maintenance score was optimum for only 38(7.27%) among the cloth users. (Table 4)

Overall 33.4% (95% CI: 30.7-36.1) had good menstrual hygienic practices with adolescent age group faring better (36.6%) compared to women in the 20-45 age group (31.7%). (Table 5)

In this study proportion of women with good menstrual hygienic practices across the selected districts were as follows; Thiruvananthapuram (61.5%), Alappuzha (50%), Kottayam (30%), Palakkad (7.5%), Malappuram (21%) and wayanad (30.5%). (Table 6)

The predictors of good menstrual hygiene on doing multivariate analysis were favorable attitude, perceiving menstruation as natural, urban residence, good knowledge, early menarche, Christian religion and higher monthly spending on menstrual wear. (Table 7)

## DISCUSSION

The analysis includes the data of 1200 participants belonging to the age group 10-45 years in 6 randomly selected districts of Kerala. Menstrual hygienic practices are dependent on distal and proximal determinants. In this study, the mean age of the study participants is 25.1 (SD 9). Hindus formed 54.7% of the study population. The Tribal population was only 2.3% and were highest in Palakkad and Wayanad.<sup>10</sup> (Table 1) The BPL/ APL status of the study population reflected the Kerala Status.<sup>10</sup>

Majority of the participants belonged to nuclear families (68.8%) and 15.8% resided in Kaccha houses. DLHS3 data shows pucca houses in Kerala to be 79.2% and kaccha houses to be only 4.4%.<sup>10</sup> Majority of participants (65.1%) were

in the low socio-economic strata. Only 9.6% of the study participants were employed. Except for the employment status there was statistically significant difference in all the socio-demographic variables across the districts.

Regarding the menstrual history, the mean age of menarche of the participants was 13.3 years (SD 1.4) and 87.2% of the participants attained menarche between the ages of 12-15 years. A small proportion (8.7%) attained menarche at 10-11 yrs. and 4.25% between 16-18 yrs. In India, the age of menarche in urban girls is reported to be 12.9 and rural areas to be 14.1 years.<sup>11</sup> In this study it was seen that the participants at higher ages had attained menarche at ages higher than their younger counterparts. This is in agreement with other studies.<sup>12</sup> Majority (79.25%) of the participants had a period frequency of 21-35 days and mean number of days of bleeding was 4.8 (SD1.3). (Table 2)

Regarding the miscellaneous factors that influence menstrual hygiene, 54.1% of the participants had perceived menstruation as unpleasant on menarche. Menstruation was perceived as a natural event with nothing special to comment by only 14.8% of the study participants. It was found in other studies that women who perceived menstruation as a natural event to have good menstrual hygiene.<sup>13,14</sup>

Only 56.2% of participants were informed of menstruation prior to menarche, and 43.8% had no prior information. The sources of information were mothers (27.2%), friends (15.2%), teachers (7.8%) and relatives (4.5%). A few had information from media (0.8%) and other sources (0.7%). It has to be noted that teachers and health workers are less quoted as informants in many studies as the present one.<sup>15,16</sup> Inappropriate and biased information can affect the perception of the adolescent girl towards menarche and menstruation, affecting her schooling and social activities.<sup>17</sup> Reasons for refraining from activities during menstruation include physical inconvenience or lethargy (26.8%), a

feeling of being unclean (62.3%) or due to taboos /beliefs (57.3%). During menstruation 26.5% of participants refrained from social activities and a few from academic activities (8.4%). Studies have reported girls and women to refrain from a variety of activities due to taboos, attitude and physical inconvenience. Despite the distinguished health status and outstanding literacy of Kerala, cultural taboos and restrictions related to menstruation persist.<sup>18,19</sup>

Only 36.3% had adequate knowledge on menstruation and menstrual hygiene. The Mean expenditure on menstrual wear was Rs.18.6 (SD 21.04), with a maximum of Rs.176/month. For commercial users alone the mean expenditure was Rs32.97 (SD 17.62).

There was good toilet facility in 83.75% of the houses belonging to participants in the surveyed area but only 41.8% of the respondents admitted to having good institutional facility and a meager 6.6% responded to have good wayside facility.(Table 3)

677(56.4%) participants used commercial napkins and the rest 523(43.6%) used cloths.485 (92.7%) of cloth users reused it for more than one cycle. Napkin maintenance score was optimum for only 38(7.27%) of the 523 cloth users. (Table 4)

The study Anuradha et al, reported that 74.7% used cloth as menstrual wear, whereas in this study only 43.6% used cloth and the rest relied on commercial disposable napkin. Studies show that in developing countries like India, among rural women and the urban poor, cloth is still the preferred menstrual wear.<sup>20,21</sup> Menstrual hygiene technologies have increased the prospects of advanced menstrual wears for women, increasing her mobility.<sup>22</sup>

The proportions of participants with good menstrual hygiene fell to a miserable 33.4% due to poor napkin frequency. Only 39.9% of the study participants used more than two pads per day. (Table 4) A study among adolescent girls in Pondicherry quoted use of four menstrual pads a day by 27.8%, three a day by 42% and two a day by 14.9% and Water Aid in Nepal has quoted use of napkin 2.7 times a day.<sup>23</sup> Disposable sanitary napkin use, largely a western practice is perceived as a vehicle to improved hygiene.<sup>24</sup> A study from Pondicherry showed that 82.5% of girls from rural and 72.2% from urban schools used cloth as sanitary material.<sup>25</sup>

Regarding maintenance of menstrual wear is considered, 59.6% of the participants of the present study maintained it properly. Of the 523 cloth users, 38 (7.3%) used it only once after which it was disposed. The remaining participants 485 (92.7%) reused cloth. Of the participants reusing cloth (485), the same cloth was used for that single cycle alone by 40 (7.6%) participants, 297 (56.8%) reused it for two to three cycles and 148 (28.3%) used it for more than 3 cycles which may be considered as indefinite use. (Table 4) This is one of the reasons for a lower proportion of participants having good menstrual hygiene. Study by Anuradha reports reuse of cloth for more than three cycles by 53.8% of participants. Proper washing of reused menstrual wear was done by 92.8% of the participants.<sup>26</sup>

In the present study, 485 of the participants who reused cloth

resorted to drying of cloth under direct sunlight, either on cloth line (76.3%) or on floor (8.25%) and 15.5% in shade. (Table 4) Drying on cloth line under direct sunlight is the preferred method as UV rays in sunlight has antiseptic properties. Proper storage of the menstrual wears was resorted to by 95.1% of the cloth users.

Disposal of sanitary wears were done properly by 98.5% of the participants and the methods were burning, burial and disposal in bins when available. A minority (1.4%) disposed off the menstrual wears in open spaces like bushes. These methods of disposal are quoted in studies done in India and other countries.<sup>26</sup>

In the present study 33.4% (95% CI: 30.7-36.1) had good menstrual hygienic practices which is lower than that quoted by another study in rural Thiruvananthapuram.<sup>26</sup> This is quite thought provoking since it was conducted a decade earlier in rural Thiruvananthapuram.

A community based study by Anuradha et al reports good menstrual hygienic practice among reproductive age group women in rural Thiruvananthapuram district to be 39.2%.<sup>26</sup> Drakshayani Devi et al has reported that only 15 % of rural adolescent girls practice good menstrual hygiene.<sup>20</sup> A community based study in rural Thiruvananthapuram, Kerala showed that 60.8 % of women dealt with menstruation in an unhygienic manner.<sup>26</sup>

The Proportion of women with good menstrual hygienic practices across the selected districts were as follows; Thiruvananthapuram (61.5%), Alappuzha (50%), Kottayam (30 %), Palakkad (7.5%),Malappuram (21%) and Wayanad (30.5%). (Table 6) The proportions of girls and women in different age groups with good menstrual hygienic practices also differed across the districts significantly. Though Kottayam and Alleppey have a higher female literacy rate than Thiruvananthapuram, higher proportion of participants with good menstrual hygiene was in Thiruvananthapuram. Palakkad had the lowest proportion of women with good practices which may be due to the lower literacy rate in the district.

The predictors of good menstrual hygiene on doing multivariate analysis were favorable attitude, perceiving menstruation as natural, urban residence, good knowledge, early menarche, Christian religion and higher monthly spending on menstrual wear.(Table 7)

## CONCLUSION

The study on menstrual hygienic practices on pubescent girls and women revealed that only 33.4% of the participants across the selected districts of Kerala had good hygienic practices. Higher proportions of adolescents (36.6%) had good practice, than women in the age group 20-45 years (31.7%) Among the selected districts of study, Thiruvananthapuram had the highest proportion of participants (61.5%) with good menstrual hygienic practices and Palakkad the lowest (7.5%). The younger age groups used more of commercial disposable sanitary napkins and older women relied more on cloth as sanitary wear.

Place of residence (urban), religion (Christian), age at

menarche (<12 years), perception of menstruation as a natural event from menarche, favorable attitude, and knowledge on menstruation and expenditure on menstrual wears were the predictors of good menstrual hygienic practices. Age at menarche showing a lowering trend calls to modulate perception and forming a favorable attitude towards menstruation at an earlier age. Knowledge on menstruation and menstrual hygienic practices were poor among the participants. Only 36.33% had good knowledge. This indicates the need to improve knowledge on menstrual hygienic practices. Education was not found to be significant factor in menstrual hygienic practices. This might be due to the fact that formal education doesn't impart knowledge specific to menstruation and menstrual hygienic practices. Though house toilet facilities were good across the selected districts (83.75%), menstrual hygiene was still lacking. Institutional and wayside toilet facilities need to be improved.

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