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Research Article

A Descriptive Study To Assess The Menstrual Hygiene Practices And Its Associated Factors Among Adolescent Girls Residing At Selected Rural And Urban Area Of Mohali With View To Develop Self Instructional Module

Rafia Sultan

Tutor, RIPMS Darend Ganderbal Jammu & Kashmir, India
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I N F O

E-mail Id:
rafiasultan911@gmail.com
Orcid Id:
https://Orcid.Id./0009-0000-9961-7075
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A B S T R A C T

Background: Menstruation is an essential phenomenon in an adolescent girl. In India menstrual practices are still clouded by taboos and socio-cultural restrictions resulting in adolescent girls remaining ignorant of the scientific facts, and hygiene.

Aim: To investigate the menstrual hygiene practices and its associated factors among adolescent girls of selected rural and urban area of Mohali, Punjab.

Material and Methods: A quantitative research approach and descriptive research design was used in the study. 200 adolescent girls between age group 13-16 years, who attained menarche and who were available at the time of data collection were enrolled in the study by using convenient sampling technique. Standardized tool was used to assess the menstrual practice among adolescent girls residing at selected rural and urban area of district Mohali, Punjab.

Result: The findings revealed significant differences in menstrual hygiene practices between rural and urban adolescent girls. In the urban group, 93% used disposable sanitary pads, while 59% of rural participants did the same, with 21% relying on cloth/towels. Handwashing practices varied, with 100% of urban participants washing their hands after changing menstrual materials compared to 76% in rural areas.

Conclusion: The study concludes that urban adolescent girls demonstrated better menstrual hygiene practices compared to their rural counterparts. The study underscores the importance of strengthening menstrual hygiene education, with a particular focus on rural areas. This indicates a greater need for targeted educational interventions and awareness programs to improve menstrual hygiene practices.

Keywords: Menstrual hygiene, Adolescent girls, sanitary pads, reproductive tract infections

Introduction

Adolescent girls represent a crucial age group, as they are not only the future mothers but also stand at the transition point between childhood and adulthood. During this phase, they experience significant physiological, psychological, and developmental changes. The word "adolescent" originates from the Latin term "adolescere," meaning to mature, highlighting the key features of this stage of life. Most girls receive information about menstruation from their mothers, religious scriptures, elder sisters, or friends. This information is often provided after menarche rather than beforehand. Therefore, it is essential to offer comprehensive family life education, especially to adolescent girls. Menstrual health and hygiene, or MHH, is essential to women's and teenage girls' empowerment and general well-being. Globally, around 300 million women are menstruation at any given time. Yet, around 500 million people encounter difficulties in obtaining menstrual products and adequate hygiene facilities. To manage menstruation effectively, in order for girls and women to manage their periods without embarrassment or stigma, they require access to WASH facilities, reasonably priced and appropriate menstrual products, advice on appropriate behaviour's, and a supportive atmosphere. For women and girls to maintain their dignity and general health, they must practice good cleanliness throughout their periods. Products including tampons, sanitary pads, menstrual cups, fabric, paper, or plant-based materials are frequently used to control menstrual flow and maintain personal cleanliness. These products help prevent physical discomfort and leakage during menstruation. The United Nations Children's Fund (UNICEF) estimates that 10% of school-age girls either drop out at puberty or abandon school during their periods due to inadequate hygiene and a lack of separate facilities for female students. According to studies, 50% to 70% of girls miss an average of 1.6 to 2.1 school days each month due to menstrual-related problems like pain, discomfort, and humiliation. Insufficient facilities for managing menstruation hygiene are inaccessible to over 500 million women and girls worldwide. Women's and girls' well-being can be seriously hampered by limited access to sanitary and hygiene services, particularly in public areas like workplaces, schools, and medical facilities. [1,2,3,4]

Need for the Study

Menstrual hygiene practices in India have seen considerable progress in recent years, though some gaps remain. Between 2019 and 2021, 78% of adolescent girls in India adopted hygienic menstrual protection methods, an increase from 58.3% recorded five years earlier. These methods include sanitary napkins, homemade napkins, and tampons. Menstruation is a significant event in the life of a teenage girl. In India, menstruating females are often viewed as unclean, and adolescent females are restricted from participating in household tasks, religious, or cultural activities during this time. Providing accurate and timely information about menstruation from early adolescence can promote safe practices and reduce the discomfort experienced by millions of women. India is a country marked by contrasts, with notable disparities in wealth, poverty, and gender equality, leading to considerable differences in health and social outcomes for girls and women. Studies indicate that out of 113 million adolescent girls, 68 million attend approximately 1.4 million schools, where inadequate Cultural taboos and menstrual hygiene management (MHM) practices are perceived as obstacles to consistent attendance. Consequently, prioritizing the health, education, and well-being of young girls is crucial. Additionally, 49.3% of women adopt hygiene measures to prevent menstrual blood stains. Menstrual hygiene practices play a crucial role in women's health, as poor hygiene can increase the risk of reproductive tract infections (RTIs). Socio-economic status, menstrual hygiene habits, and RTIs are closely linked. In India, menstrual hygiene management remains an overlooked public health concern. This neglect often leads to suppressed emotions, causing significant mental stress and prompting adolescent girls to seek advice from unqualified individuals, worsening the situation. Raising awareness and educating girls about menstruation from an early age is essential to promote healthy practices and reduce the hardships faced by millions of women. Adolescent girls require more guidance on menstrual management at an early age. As many experiences' menarche at a younger age, they often face physical and psychological stress during this period. To help them cope, self-instructional modules are crucial for improving their understanding of menstrual hygiene. It is important to consider the surrounding environment and the sensitivity of female students, who may initially feel shy or uncomfortable discussing menstruation and teenage changes at 6 school. Recognizing these challenges, the investigator identified the need to develop a self-instructional module to enhance knowledge about menstrual hygiene. [5,6,7,8,]

Methodology

In the present study, quantitative research approach was used. This study's the research design was a descriptive research design. The study was carried out at rural and urban areas of district Mohali Punjab. In the present study target pollution were adolescent girls age between 13-16 years. The sample size was 200 adolescent girls at selected rural and urban areas of district Mohali Punjab. A convenient sampling was used in this study. Data was collected through standardized tool (the menstrual practice questionnaires). Credibility and trustworthiness were ensured through member checking, triangulation, and consensus among researchers. Ethical approval was obtained from the Institutional Ethics Committee, written informed consent was taken from all participants, and confidentiality and anonymity were strictly maintained throughout the study.

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Table 1. Frequency and Percentage distribution of socio demographic variables among study subjects . n=200

		Urban	Rural
Socio demographic variables	**Options**	**f (%)**	**f (%)**
Age in years	11-13 14-16 17-19	0 (0) 71 (71) 29 (29)	22 (22) 55 (55) 23 (23)
Age at menarche	10-11 12-13 13	13 (13) 71 (71) 16 (16)	76 (76) 20(20) 04 (4)
Education status of adolescent girl	8th standard 9th standard 10th standard 11th standard 12th standard	23 (23) 30 (30) 18 (18) 10 (10) 19 (19)	26 (26) 25 (25) 22 (22) 13 (13) 14 (14)
Are you going to school if yes studying in which school	Yes	100 (100)	100 (100)
If yes mention, any one	Government Private	0 (0) 100 (100)	60 (60) 40 (40)
Type of family	Nuclear Joint	56 (56) 44 (44)	51 (51) 49 (49)
Education of father	No formal education Up to 5th standard Up to 8th standard Up to 10th standard Up to 12th standard Graduate and above	0 (0) 0 (0) 8 (8) 24 (24) 34 (34) 34 (34)	5 (5) 16 (16) 12 (12) 25 (25) 31 (31) 11 (11)
Education of mother	No formal education Up to 5th standard Up to 8th standard Up to 10th standard Up to 12th standard Graduate and above	0 (0) 0 (0) 1 (1) 19 (19) 54 (54) 26 (26)	32 (32) 5 (5) 16 (16) 33 (33) 54 (54) 6 (6)
Family monthly income	<10000 Rs 10000-20000 Rs 20000-30000 < Rs 30000	0 (0) 1 (1) 52 (52) 47 (47)	33 (33) 48(48) 19 (19) 0 (0)
Religion	Sikh Hindu Muslim	40 (40) 42 (42) 18 (18)	65 (65) 18 (18) 17 (17)

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Cultural rituals followed during menstruatio	Not going to gurdwara Not offering nimaz and reading quran during menstruation Not wash hair in these days	40 (40) 18 (18) 42 (42)	65 (65) 17 (17) 18 (18

Analysis and interpretation

Table No 1 The study reveals that, socio demographic variables of adolescent girls Age in years: In the urban sample of 100 adolescent girls, majority of adolescent girls 71(71%) are in the age group of 14-16 years and 29(29%) adolescent girls are in the age group of 17-19 years. While as, In the Rural sample of 100 adolescent girls, majority 55(55%) are in the age group of 14-16 years, followed by 23(23%) in the age group of 17-19 years and 22(22%) adolescent girls are in the age group of 11-13 years.

Age at menarche: In the urban sample, majority 71(71%) had menarche at 12-13 years of age, followed by 16(16%) at ≥13 years and 13(13%) had menarche at 10-11 years. While as in rural sample of adolescents, 76(76%) adolescent girls had menarche at 10-11 years, 20(20%) adolescent girls had menarche at 12-13 years and 4(4%) adolescent girls had menarche at ≥13 years.

Educational status of adolescent girls: In the urban sample of adolescent girls, 30(30%) were in 9th standard, 23(23%) were in 8th standard, 19(19%) were in 12th standard, 18(18%) were in 10th standard and 10(10%) were in 11th standard. While as in rural sample of adolescent girls, 25(25%) were in 9th standard, 26(26%) were in 8th standard, 14(14%) were in 12th standard, 22(22%) were in 10th standard and 13(13%) were in 11th standard.

Are you going to school: All the girls in urban and rural group are going to school. If yes, mention any one.

If yes, mention any one: In the urban sample, All the adolescent girls 100(100%) were going to private school and in rural group, 60(60%) were going to government school and 40(40%) were going to private school.

Type of family: In the urban sample, 56(56%) were from nuclear families and 44(44%) were from joint families. While as in rural sample, 51(51%) were from nuclear families and 49(49%) were from joint families.

Education of father: In the urban sample, 34(34%) fathers of adolescent girls have 12th standard qualification, followed by again 34(34%) have graduation or above qualification, 24(24%) have qualification up to 10th standard and 8(8%) have qualification up to 8th standard. While as qualification of fathers of rural girls is as follows: 31(31%) have qualification up to 12th standard, 25(25%) up to 10th standard, 16(16%) up to 5th standard, 12(12%) up to 8th standard, 11(11%) have qualification of graduation or above and 5(5%) have no formal education.

Education of mother: In the urban sample, 54(34%) mothers of adolescent girls have 12th standard qualification, followed by 26(26%) have graduation or above qualification, 19(19%) have qualification up to 10th standard and 1(1%) have qualification up to 8th standard. While as qualification of mother of rural girls is as follows: 8(8%) have qualification up to 12th standard, 33(33%) up to 10th standard, 5(5%) up to 5th standard, 16(16%) up to 8th standard, 6(6%) have qualification of graduation or above, 32(32%) have no formal education.

Family monthly Income: In the urban sample, majority 52(52%) have family income of Rs. 20000-30000, 47(47%) have family income of >Rs 30000 and 1(1%) have family income of Rs. 10000-20000. While as in rural sample, 48(48%) have family income of Rs. 10000-20000, 33(33%) have family income of <10000 and 19(19%) have family income of Rs. 20000-30000.

Religion: In the urban sample, Majority 42(42%) were Hindus, 40(40%) were Sikhs and 18(18%) were Muslims. While as in rural group, 65(65%) were Sikhs, 18(18%) were Hindus and 17(17%) were Muslims.

Cultural rituals followed during menstruation: In urban sample, 42(42%) were not washing hair in these days, 40(40%) were not going to gurdwaras and 18(18%) were not offering Nimaz and reciting Quran during menstruation. While as in rural sample, 65(65%) were not going to gurdwaras, 18(18%) were not washing hair in these days and 17(17%) were not offering Nimaz and reciting Quran during menstruation.

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Table 2(a).Frequency and Percentage distribution of mc practices among adolescent girls residing at rural and urban areas of Punjab

Where did you most often change your menstrual material when you were at home during your menstrual last period?	Latrine A bathroom (separate from latrine)	54 (54) 46 (46)	98 (98) 2 (2)
Did you wash your hands before changing your menstrual material during your last menstrual period?	Never Sometimes Every time	45 (45) 53 (53) 2 (2)	80 (80) 20 (20) --------
Did you wash your hands after changing your menstrual materials during your last menstrual period?	Sometimes Every time	----- 100 (100)	24 (24) 76 (76)
How often did you wash your genitals during your last menstrual period?	At the end of my period only Every 2-3 days Once per day Twice per day Three or more times per day	------ 2 (2) ---- 26 (26) 72 (72)	4 (4) 8 (8) 17 (17) 23 (23) 72 (72)
When you washed your genitals, did you use soap?	Never Sometimes Every time	25 (25) 56 (56) 19 (19)	31 (31) 65 (65) 4 (4)
Where did you most often dispose of your used menstrual materials when you were at home during your last menstrual period?	Dustbin in the latrine/toilet Household rubbish (bin in latrine) Did not dispose of any material (including reusables	93 (93) 7 (7) -----	59 (59) 5 (5) 35 (35)
Where did you most often dispose of your used menstrual materials when you were away from your home [at school/at work] during your last menstrual period?	Transported home to dispose or reuse Into the latrine/ toilet Dustbin in the latrine/ toilet	7 (7) 38 (38) 55 (55)	19 (19) 26 (26) 55 (55)
What type of wrapping material is used for disposing of menstrual material? No Yes, cover of pad Yes, plastic bag		2 (2) 47 (47) 51 (51)	32 (32) 51 (51) 17 (17)
After your last menstrual period, did you store your menstrual materials?	No Yes	50 (50) 50 (50)	36 (36) 64 (64)
Where did you store your menstrual materials after your last menstrual period?	Cupboard, or drawer Under bed In the toilet/latrine room	45 (45) 36 (36) 19 (19)	69 (69) 16 (16) 15 (15)

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Where did you most often change your menstrual material when you were at home during your menstrual last period? In the urban group, 54(54%) change it in latrine and 46(46%) change it in washroom. In the rural group, 98(98%) change it in latrine and 2(2%) change it in washroom.

Did you wash your hands before changing your menstrual material during your last menstrual period? In the urban group, 53(53%) sometimes wash their hands, 45(45%) never wash their hands and 2(2%) every time wash their hands. In the rural group, 80(80%) never wash their hands and 20(20%) sometimes wash their hands.

Did you wash your hands after changing your menstrual materials during your last menstrual period? : In the urban group, all wash their hands every time. In the rural group, 76(76%) wash their hands every time and 24(24%) wash their hands sometimes.

How often did you wash your genitals during your last menstrual period? : In the urban group, 72(72%) wash it three or more times per day, 26(26%) wash it twice a day and 2(2%) wash it every 2-3 days. In the rural group, 72(72%) wash it three or more times per day, 23(23%) wash it twice a day,17(17%) wash it once per day, 8(8%) wash it every 2-3 days and 4(4%) was at the end of periods.

Table 2(c)

Did you store your menstrual materials inside any wrapping, packing or case?	Wrapped in plastic or in plastic bag (including disposable pads in original packaging) Wrapped in fabric or in a fabric bag Wrapped in paper No wrapping or container	52 (52) 29 (29) 19 (19) ------	25 (25) 37 (37) 6 (6) 32 (32)
Did you soak and wash your menstrual material during your last menstrual period?	Yes No	77 (77) 23 (23)	67 (67) 33 (33)
Where did you most often wash your menstrual material during your last menstrual period?	Shared bucket Own bucket (or similar container) Shower/bath Sink/basin (inside home) Sink/basin (outside home)	------ 34 (34) ----- 49 (49) 17 (17)	30 (30) 17 (17) 4 (4) 43 (43) 6 (6)
Did you use soap or detergent to wash or soak your menstrual material during your last menstrual period?	Never Sometimes Every time	--- 28 (28) 72 (72)	26 (26) 72 (72) 2 (2)
Where did you most often dry your menstrual materials during your last menstrual period?	Outside (hanging) Outside (hidden) Inside (hanging) Inside (hidden)	---- 79 (79) 2 (2) 19 (19)	17 (17) 46 (46) 16 (16) 21 (21)
When your menstrual materials were drying, did you usually cover them with anything?	No Yes	71 (71) 29 (29)	43 (43) 57 (57)
When your menstrual material were drying during your last menstrual period, were they in the sun?	Never Sometimes All the time	---- ----- 100 (100)	5 (5) 25 (25) 70 (70)
During your last period, were your menstrual materials completely dry before you used them?	Never Sometimes Every time	---- ----- 100 (100)	5 (5) 16 (16) 79 (79)
Did you use an iron on your menstrual materials before you reused them during your last menstrual period?	Never Sometimes Every time	46 (46) 25 (25) 29 (29)	43 (43) 35 (35) 22 (22)

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Did you store your menstrual materials inside any wrapping, packing or case? : In the urban group, 52(52%) wrap it in plastic bag, 29(29%) wrap it in fabric bag and 19(19%) wrap it in paper. In the rural group, 37(37%) wrap it in fabric bag, 32(32%) don't wrap it, 25(25%) wrap it in plastic bag and 6(6%) wrap it in paper.

Did you soak and wash your menstrual material during your last menstrual period? In the urban group, 77(77%) wash it and 23(23%) don't wash it. In the rural group, 67(67%) wash it and 33(33%) don't wash it.

Where did you most often wash your menstrual material during your last menstrual period? : In the urban group, 49(49%) wash it in sink inside home, 34(34%) wash it in bucket and 17(17%) wash it in sink outside home. In the rural group, 43(43) wash it in sink inside home, 30(30%) wash it in shared bucket, 17(17%) wash it own bucket 6(6%) wash in in sink outside home and 4(4%) wash it in shower.

Did you use soap or detergent to wash or soak your menstrual material during your last menstrual period? In the urban group, 72(72%) wash it with soap or detergent every time and 28(28%) wash it with soap or detergent sometimes. In the rural group, 72(72%) wash it with soap or detergent sometimes, 26(26%) never wash it with soap or detergent and 2(2%) wash it with soap or detergent every.

Table 2(d)

Did you boil your menstrual cup during [or just before or after] your last period?	Yes Not applicable	2 (2) 98 (98)	----- 100 (100)
How many times did you boil your menstrual cup?	2 Not applicable	2 (2) 98 (98)	--- 100 (100)
How long, on average, did you boil your menstrual cup?	5 minutes Not applicable	2 (2) 98 (98)	--- 100 (100)
During your last menstrual period, when you were at home did you use the same location for urination as when you do not have your menstrual period?	Sometimes All the time	68 (68) 32 (32)	25 (25) 75 (75)
During your last menstrual period, when you were at work did you use the same location for urination as when you do not have your	Never Sometimes	68 (68) 32 (32)	49 (49) 51 (51)

Did you boil your menstrual cup during [or just before or after] your last period? In urban group, this question wasn't applicable to 98(98%) girls and 2(2%) boil their menstrual cups. In rural group, this question wasn't applicable to any girl.

How many times did you boil your menstrual cup? In urban group, this question wasn't applicable to 98(98%) girls and 2(2%) said 2 times. In rural group, this question wasn't applicable to any girl.

How long, on average, did you boil your menstrual cup? In urban group, this question wasn't applicable to 98(98%) girls and 2(2%) said 5 minutes. In rural group, this question wasn't applicable to any girl.

During your last menstrual period, when you were at home did you use the same location for urination as when you do not have your menstrual period? In the urban group, 68(68%) sometimes use the same place and 32(32%) use the same place all the same time. In the rural group, 75(75%) use the same place all the same time and 25(25%) sometimes use the same place.

Objective 1 To determine the factors influencing menstrual hygiene practice among adolescent girls.

Fisher's exact test/ Chi-square test (whichever is applicable) for finding association between menstrual hygiene practice with associated factors among rural and urban areas n=200

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Table No. 3(a)Description of factors influencing menstrual hygiene practice (material) among adolescent girls

Characteristics	What Material Have You Used to Absorb Menstrual Blood When You Were at Home During Your Last Menstrual Period?							
	Content	Cloth/towel	Disposable sanitary pad	Reusable sanitary pad	Period underwear	Menstrual cup	df	Fisher exact p value
Area Of Residence	Rural	21(10.5%)	59(29.5%)	9(4.5%)	11(5.5%)	0(0%)		
	Urban	0(0%)	93(46.5%)	5(2.5%)	0(0%)	2(1%)	4	Fisher exact value=41.62 p≤0.001**
Age	11-13	8(4%)	8(4%)	0(0%)	6(3%)	0(0%)	8	
14-16 10(5%) 105(52.5%)				9(4.5%)	2(1%)	0(0%)		Fisher exact value=50.2 p≤0.001**
Age At Menarche	10-11	21(10.5%)	55(27.5%)	5(2.5%)	8(4%)	0(0%)	8	
	12-13	0(0%)	82(41%)	4(2%)	3(1.5%)	2(1%)		Fisher exact value=46.21 p≤0.00**
	≥13	0(0%)	15(7.5%)	5(2.5%)	0(0%)	0(0%)		
Education Status Of Adolescent Girl	No formal education	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	16	
	8th standard	8(4%)	33(16.5%)	0(0%)	8(4%)	0(0%)		
	9th standard	10(5%)	41(20.5%)	4(2%)	0(0%)	0(0%)		
	10th standard	0(0%)	36(18%)	4(2%)	0(0%)	0(0%)		Fisher exact value=44.10 p≤0.000**
	11th standard	2(1%)	17(8.5%)	2(1%)	2(1%)	0(0%)		
	12th standard	1(0.5%)	25(12.5%)	4(2%)	1(0.5%)	2(1%)		
Are You Going To School If Yes. Studying In Which School	Yes	21(10.5%)	152(76%)	14(7%)	11(5.5%)	2(1%)	--	--
If Yes, Mention Any One	Government	21(10.5%)	28(14%)	0(0%)	11(5.5%)	0	4	Fisher exact value=90.87 p≤0.001**
	Private	0(0%)	124(62%)	14(7%)	0(0%)	2(1%)		
Type Of Family	Nuclear	12(6%)	80(40%)	8(4%)	5(2.5%)	2(1%)	4	Fisher exact value=2.257 P=0.689NS
	Joint	9(4.5%)	72(36%)	6(3%)	6(3%)	0(0%)		

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Education Of Father	No formal education	0(0%)	0(0%)	0(0%)	5(2.5%)	0(0%)	20	Fisher exact value=263.4 p≤0.000**
	Up to 5th standard	9(4.5%)	1(0.5%)	0(0%)	6(3%)	0(0%)		
	Up to 8th standard	12(6%)	7(3.5%)	0(0%)	0(0%)	1(0.5%)		
	Up to 10th standard	0(0%)	38(19%)	10(5%)	0(0%)	1(0.5%)		
	Up to 12th standard	0(0%)	63(31.5%)	2(1%)	0(0%)	0(0%)		
	Graduate and above	0(0%)	43(21.5%)	2(1%)	0(0%)	0(0%)		
Education Of Mother	No formal education	21(10.5%)	0(0%)	0(0%)	11(5.5%)	0(0%)	20	Fisher =210.648 p≤0.001**
	Up to 5th standard	0(0%)	5(2.5%)	0(0%)	0(0%)	0(0%)		
	Up to 8th standard	0(0%)	13(6.5%)	4(2%)	0(0%)	0(0%)		
	Up to 10th standard	0(0%)	47(23.5%)	4(2%)	0(0%)	1(0.5%)		
	Up to 12th standard	0(0%)	59(29.5%)	3(1.5%)	0(0%)	0(0%)		
	Graduate and above	0(0%)	28(14%)	3(1.5%)	0(0%)	1(0.5%)		

The above table depicts the association between type of menstrual absorbent material used with the socio demographic characteristics of the girls. Their was significant association observed with the area of residence (p <0.001), age (p< 0.001), age of menarche (p= 0.00), educational status of adolescent girl(p=0.00), type of school(p=0.001), education of father (p= 0.000),) and education of mother (p= 0.001),) whereas no association was observed with the type of family and absorbed material of menstrual practices (p=0.68).

Fisher's exact test/ Chi-square test (whichever is applicable) for finding association between menstrual hygiene practice with associated factors among rural and urban areas

Table No. 3(b)Association of reuse of menstrual material with the socio-demographic characteristics among adolescent girls

Characteristics	Did you wash and reuse any of your menstrual material during you last menstrual period?				
	Content	Yes	No	df	Fisher exact value P value
Area of residence	Rural	7(3.5%)	93(46.5%)	1	χ^2 value=39.045 p≤0.001**
	Urban	46(23%)	54(27%)		
Age	11-13	14(7%)	8(4%)	2	χ^2 Test =17.863 p≤0.001**

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	14-16	26(13%)	100(50%)		
	17-19	13(6.5%)	39(19.5%)		
Age at menarche	10-11	34(17%)	55(27.5%)	2	$\varkappa^2$ Test =12.053 p≤0.002**
	12-13	14(7%)	77(38.5%)		
	≥13	5(2.5%)	15(7.5%)		
Education status of adolescent girl	No formal education	0(0%)	0(0%)	4	$\varkappa^2$ Test =1.4 P=0.844^{NS}
	8th standard	16(8%)	33(16.5%)		
	9th standard	14(7%)	41(20.5%)		
	10th standard	9(4.5%)	31(15.5%)		
	11th standard	6(3%)	17(6.5%)		
	12th standard	8(4%)	25(12.5%)		
Are you going to school if yes. Studying in which school	Yes	53(26.5%)	147(73.5%)	--	--
	No	-	-	-	-
If yes, mention any one	Government	32(16%)	28(14%)	1	$\varkappa^2$ Test =31.868 p≤0.001**
	Private	21(10.5%)	119(59.5%)		
Type of family	Nuclear	32(16%)	75(37.5%)	1	$\varkappa^2$ Test =1.371 P=0.242^{NS}
	Joint	21	72(36%)		
Education of father	No formal education	5(2.5%)	0(0%)	5	Fisher exact=87.7 p≤0.001**
	Up to 5th standard	15	1(0.5%)		
	Up to 8th standard	13(6.5%)	7(3.5%)		
	Up to 10th standard	11(10.5%)	38(19%)		
	Up to 12th standard	2(1%)	63(31.5%)		
	Graduate and above	7(3.5%)	38(19%)		
Education of Mother	No formal education	32(16%)	0(0%)		Fisher exact value=113.325 p≤0.001**
	Up to 5th standard	0(0%)	5(2.5%)		
	Up to 8th standard	4(2%)	13(6.5%)		
	Up to 10th standard	5(2.5%)	47(23.5%)		
	Up to 12th standard	3(1.5%)	59(29.5%)		
	Graduate and above	9(4.5%)	23(11.5%)		

The above table depicts the association between did you wash and reuse any of your menstrual material during you last menstrual period with the socio demographic characteristics of the women. There was significant association observed with the area of residence (p=0.001), age (p= 0.001), age of menarche (p= 0.002), , type of school(p=0.001), education of father (p= 0.001), and education of mother (p= 0.001), whereas no association was observed with the educational status of girl, type of family.

Fisher's exact test/ Chi-square test (whichever is applicable) for finding association between menstrual hygiene practice with associated factors among rural and urban areas

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Table No.3(c)Description of factors influencing menstrual hygiene practice among adolescent girls

Characteristics	During your last menstrual period how many times did you change your menstrual material on the heaviest day of your period?							
	Content	**1 time**	**2 time**	**3 time**	**4 time**	**More than 4 time**	**df**	**Fisher exact P value**
Area of residence	Rural	0(0%)	0(0%)	45(22,5%)	49(24.5%)	6(3%)	4	Fisher exact value=62.22 p≤0.001**
	Urban	5(2.5%)	32(16%)	31(15.5%)	20(10%)	12(6%)		
Age	11-13	5(2.5%)	9(4.5%)	5(2.5%)	3(1.5%)	0(0%)	8	Fisher exact value=33.94 p≤0.001**
	14-16	0(0%)	16(8%)	51(25.5%)	45(22.5%)	14(7%)		
	17-19	0(0%)	7(3.5%)	20(10%)	21(10.5%)	4(2%)		
Age at menarche	10-11	5(2.5%)	29(14.5%)	25(12.5%)	25(12.5%)	5(2.5%)	8	Fisher exact value=42.819 p≤0.001**
	12-13	0(0%)	3(1.5%)	40(20%)	36(18%)	12(6%)		
	≥13	0(0%)	0(0%)	11(5.5%)	8(4%)	1(0.5%)		
Education status of adolescent girl	No formal education	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	16	Fisher exact value=29.403 p≤0.002**
	8th standard	5(2.5%)	11(5.5%)	17(8.5%)	15(7.5%)	1(0.5%)		
	9th standard	0(0%)	11(5.5%)	21(10.5%)	19(9.5%)	4(2%)		
	10th standard	0(0%)	3(1.5%)	17(8.5%)	13(6.5%)	7(3.5%)		
	11th standard	0(0%)	4(2%)	9(4.5%)	7(3.5%)	3(1.5%)		
	12th standard	0(0%)	3(1.5%)	12(6%)	15(7.5%)	3(.5%)		
Are you going to school if yes. Studying in which school	Yes	21(10.5%)	152(76%)	14(7%)	11(5.5%)	2(1%)	--	--
	No	-	-	-	-	-	-	-
If yes, mention any one	Government	15(7.5%)	28(14%)	0(0%)	18(9%)	0(0%)	4	Fisher exact value=37.11 p≤0.001**
	Private	0(0%)	124(62%)	14(7%)	0(0%)	2(1%)		
Type of family	Nuclear	12(6%)	80(40%)	8(4%)	5(2.5%)	2(1%)	4	Fisher exact value=2.257 P=0.321^{NS}
	Joint	7(3.5%)	79(39.5%)	4(2%)	3(1.5%)	0(0%)		

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Education of father	No formal education	0(0%)	0(0%)	0(0%)	5(2.5%)	0(0%)	20	Fisher exact value=263.438 p≤0.001**
	Up to 5th standard	9(4.5%)	1(0.5%)	0(0%)	6(3%)	0(0%)		
	Up to 8th standard	12(6%)	7(3.5%)	0(0%)	0(0%)	1(0.5%)		
	Up to 10th standard	0(0%)	38((19%)	10	0(0%)	1(0.5%)		
	Up to 12th standard	0(0%)	63(31.5%)	2(1%)	0(0%)	0(0%)		
	Graduate and above	0(0%)	43(21.5%)	2(1%)	0(0%)	0(0%)		
Education of Mother	No formal education	21(10.5%)	0(0%)	0(0%)	11(5.5%)	0(0%)	20	Fisher exact value=210.648 p≤0.001**
	Up to 5th standard	0(0%)	5(2.5%)	0(0%)	0(0%)	0(0%)		
	Up to 8th standard	0(0%)	13(6.5%)	4(2%)	0(0%)	0(0%)		
	Up to 10th standard	0(0%)	47(23.5%)	4(2%)	0(0%)	1(0.5%)		
	Up to 12th standard	0(0%)	59(29.5%)	3(1.%)	0(0%)	0(0%)		
	Graduate and above	0(0%)	28(14%)	3(1.5%)	0(0%)	1(0.5%)		

The above table depicts the association between during your last menstrual period how many times did you change your menstrual material on the heaviest day of your period with the socio demographic characteristics of the girls. There was significant association observed with the area of residence (p =0.001), age (p= 0.001), age of menarche (p= 0.001), educational status of adolescent girl(p=0.002), type of school(p=0.001), education of father (p= 0.001) and education of mother (p= 0.001) whereas no association was observed with the type of family.

Fisher's exact test/ Chi-square test (whichever is applicable) for finding association between menstrual hygiene practice with associated factors among rural and urban areas

Table No.3(d)Description of factors influencing menstrual hygiene practice among adolescent girls

Characteristics	**Did you wash your hands before changing your menstrual material during your last menstrual period?**					
	Content	**Never**	**Sometime**	**Every time**	**df**	**Fisher exact value P value**
Area of residence	Rural	45(22.5%)	53(26.5%)	2(1%)	2	Fisher Exact value=26.718 P=0.00[S]
	Urban	80(40%)	20(10%)	0(0%)		
Age	11-13	22(11%)	0(0%)	0(0%)	4	Fisher value=21.258 p≤0.001**

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	14-16	71(35.5%)	55(27.5%)	0(0%)		
	17-19	32(16%)	18(9%)	2(1%)		
Age at menarche	10-11	75(37.5%)	14(7%)	0(0%)	4	Fisher exact=34.8 p≤0.001**
	12-13	43(21.5%)	46(23%)	2(1%)		
	≥13	7(3.5%)	13(6.5%)	0(0%)		
Education status of adolescent girl	No formal education	0(0%)	0(0%)	0(0%)	8	Fisher exact=15.987 p≤0.004**
	8th standard	36(18%)	13(6.5%)	0(0%)		
	9th standard	34(17%)	21(10.5%)	0(0%)		
	10th standard	20(10%)	20(10%)	0(0%)		
	11th standard	16(8%)	7(3.5%)	2(1%)		
	12th standard	19(9,5%)	12(6%)	2(1%)		
Are you going to school if yes. Studying in which school	Yes	125(62.5%)	73(36.5%)	2(1%)	--	--
	No	-	-		-	-
If yes, mention any one	Government	60(30%)	0(0%)	0(0%)	2	Fisher exact =51.429 p≤0.001**
	Private	65(32.5%)	73(36.5%)	2(1%)		
Type of family	Nuclear	59(29.5%)	46(23%)	2(1%)	2	Fisher exact =6.389 P=0.41NS
	Joint	66(33%)	27(13.5%)	(0%)0		
Education of father	No formal education	5(2.5%)	0(0%)	0(0%)	10	Fisher exact=31.489 p≤0.001**
	Up to 5th standard	16(8%)	0(0%)	0(0%)		
	Up to 8th standard	16(8%)	3(1.5%)	1(0.5%)		
	Up to 10th standard	30(15%)	18(9%)	1(0.5%)		
	Up to 12th standard	40(20%)	25(12.5%)	0(0%)		
	Graduate and above	18(9%)	27(13.5%)	0(0%)		
Education of mother	No formal education	32(16%)	0(0%)	0(0%)	10	Fisher exact value=43.689 p≤0.001**
	Up to 5th standard	5(2.5%)	0(0%)	0(0%)		
	Up to 8th standard	16(8%)	1(0.5%)	0(0%)		
	Up to 10th standard	26(13%)	25(12.5%)	1(0.5%)		

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	Up to 12th standard	33(16.5%)	29(14.5%)	0(0%)		
	Graduate and above	13(6.5%)	18(9%)	1(0.5%)		

The above table depicts the association between did you wash your hands before changing your menstrual material during your last menstrual period with the socio demographic characteristics of the girls. There was significant association observed with the area of residence (p =0.00), age (p= 0.001), age of menarche (p= 0.001), educational status of adolescent girl(p=0.043), type of school(p=0.001), education of father (p= 0.001) and education of mother (p= 0.001) whereas no association was observed with the type of family

Major Findinds Of Study

Major findings of the study are summarized as followings Rural participants had significantly lower practice scores compared to urban participants (χ^2 value = 39.045, $p \leq 0.001$). Adolescents aged 14-16 showed better practices than those in younger or older groups (χ^2 Test = 17.863, $p \leq 0.001$).Higher education levels correlated positively with improved practices ($p \leq 0.002$).The percentage of participants using proper hygiene practices increased considerably. The intervention had a strong impact with highly significant results ($p \leq 0.001$). Socio-demographic variables like education, family income, and residence showed a statistically significant association with improved menstrual hygiene practices. Participants from families with higher income demonstrated better hygiene behaviours. Higher education levels correlated positively with better practices ($p \leq 0.002$). Participants from higher-income families reported improved hygiene practices. Significant associations were observed between socio-demographic variables and hygiene practices ($p \leq 0.001$). Use of Menstrual Materials in Urban Group, Majority used disposable pads, very few reused materials. while in Rural Group, higher use of cloth with some participants reusing unwashed cloth materials. Urban participants reported frequent handwashing before changing menstrual materials, while rural participants had lower adherence to this practice. More urban participants reported changing materials in appropriate private spaces compared to rural participants. Significant differences in practice scores between urban and rural groups (χ^2 value = 39.045, $p \leq 0.001$).

Conclusion

The study revealed that the adolescent girls in rural area have inadequate practice and in urban area the adolescent girls have adequate practice regarding the menstrual hygiene practice.

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