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Original Research Article

A comparative study of direct health intervention and peer-led intervention on menstrual hygiene management of adolescent girls in rural India

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ABSTRACT

Background: Menstrual hygiene management (MHM) among adolescents in rural India is negatively influenced by myths and taboos which predispose them to infections which can be dispelled by health education by experts or peers. The study aimed to demonstrate the relative effectiveness of direct health education over peer led health education on MHM.
Methods: A longitudinal follow up intervention study recruiting 486 school going adolescent females divided in three groups I, II and III was conducted. Group I received peer led, while group II received direct health education and group III was control. Pre and post intervention scores of participants were compared.
Results: Direct intervention group demonstrated highest improvement in number of participants having good MHM scores ($p<0.05$). Mean MHM scores of direct intervention group participants were the highest among all the three groups ($p<0.05$). Knowledge score of direct intervention group was significantly higher than group 1 ($p=0.001$) and group III with no difference in practice scores between group I and II ($p=0.147$).
Conclusions: Direct health education as an intervention is more relatively effective than peer led in MHM of adolescent females.

Keywords: Adolescent health, Menstrual hygiene management, Health education, Peer led education, Direct health intervention, Myths

INTRODUCTION

According to the WHO, the adolescence period is a transition from childhood to adult hood.[1] Out of the 1.2 billion adolescent population, India is home to 253 million adolescents who constitute 20% of the world's adolescent's population.[1,2] At any point of time, more than 1 in 10 children in India are teenagers currently experiencing puberty and more than a quarter of all children will transition to adolescence and puberty within the next decade.[3-5]

As a physiological process, menstruation is unique to the reproductive cycle of females that begins at menarche and ends at meopuase.[6,7] With the onset of menstruation, a girl becomes aware of her emerging identity as a female and is greatly influenced by the feedback she receives from her family, peers and the society.[8] The ages of onset

of menstruation is affected by heredity, racial background and nutritional status.[9,10]

Surprisingly still today in rural India, this physiological process of menstruation is poorly understood due to myths, taboos and misconceptions attached to it. These act as a barrier for MHM thus endangering the reproductive health of the female.[11] Absence of adequate menstrual hygiene can predispose to urinary tract infections (UTI), scabies in the vaginal area, abdominal pain, school absenteeism and complications during future pregnancy.[12-15]

The myths and taboos regarding menstrual health and disease are explored by various studies one of which is related to the day when a girl attains puberty.[16,17] If the menarche occurs on monday, the girl will be eminently chaste, if it occurs on Tuesday, she is likely to be a widow early in her days and so on.[18] The myth of impurity attached to which ascertains that the movement of the girl should be restricted. Restrictions include not being allowed to take bath, change clothes frequently, comb hair, enter religious places and dietary restrictions (taboo on the consumption of food like rice, curd, milk, lassi, potato, onion, sugarcane) during the menstrual period are also imposed.[19]

Various studies have demonstrated that scientific health education can bring about a positive change in knowledge and practice behavior among adolescent girls regarding MHM and can help useful to dispel age old myths, taboos and prejudices thus making the experience of menstruation more non-discriminatory and a normalized experience.[8,20-23]

Peer-led health education which is administered by trained volunteers can be used as a method of health education to enlighten the participants. The advantage of this method is that the participants are more receptive to the advice as ice-breaking is easy, they feel more relaxed and involved is the process. It overcomes language and cultural barriers and thus helps in reinforcement. Disadvantages include selecting and training of peers, peer to participant communication process and loss of information on subsequent sessions.

Direct health education administered through the agency of an expert has also been shown to positively influence knowledge and practice behavior among the participants.[20,24] The advantage of this method is that health education is administered by an expert and there is no loss of information on the subsequent visit. Disadvantages include the development of teacher-student relationship, didactic method of learning, language and socio-cultural barrier can impede possible information transmission.

So, the present study was aimed to compare the relative effectiveness of direct health education with peer-led health education as an intervention to improve the knowledge and practices regrading menstrual hygiene among adolescence girls.

The study will emphasize the important role played by health education in MHM which can be used by the primary care physicians to treat common menstrual problems faced by adolescents.

METHODS

The present study was a longitudinal follow up intervention study conducted for a period of 15 months. It was a part of the project conducted from June 2015 to October 2017 in the Perambalur district of Tamil Nadu state of India. This the first part of the study can be accessed at http://dx.doi.org/10.18203/2394-6040.ijcmph20211247.

The study participants were high school adolescent girls of 13-15 age group selected using the random sampling technique. Review of the literature suggested that only 50% of school going adolescent females have adequate knowledge regarding menstruation and an effect size of 0.31 post-intervention. The minimum required sample computed for each group was 81, which came out to be 243 for three groups. On considering the design effect of 2, the final sample size came to be 486 study participants.

Details regarding the number of girls studying in 8th and 9th grades, location of school were collected from the district educational officer. Considering a minimum enrolment of 50 girls in class 8th and 9th, the investigators needed approximately 9 schools for the study to reach a sample size of 486. From the list of schools, 9 schools were selected by cluster random sampling. From the selected schools, all eligible consenting adolescent girls were included as study participants for the study. Schools were randomly allocated into three groups. Group I was the peer-led intervention group where health education was administered by trained students, group II was the direct intervention group where the health education was administered by the principal investigator and group III as the control group which received neither the first intervention nor the second intervention. It was made sure that the schools of various groups were located 10 kms apart in order to prevent intervention dilution. Adolescent girls of grades 8th and 9th, who have attained menarche 6 months back and who gave consent were included in the study whereas girls who were on long leave and could not be contacted in two subsequent visits were excluded from the study (Figure 1).

A self-administered, pre-tested and semi-structured questionnaire in the local language was used for data collection. The questionnaire included socio-demographic profile, menarche and menstruation details, knowledge regarding menstruation and menstrual hygiene, attitude of participants towards menstruation and menstrual hygiene, practices during menstruation and restrictions faced by participants during menstruation.

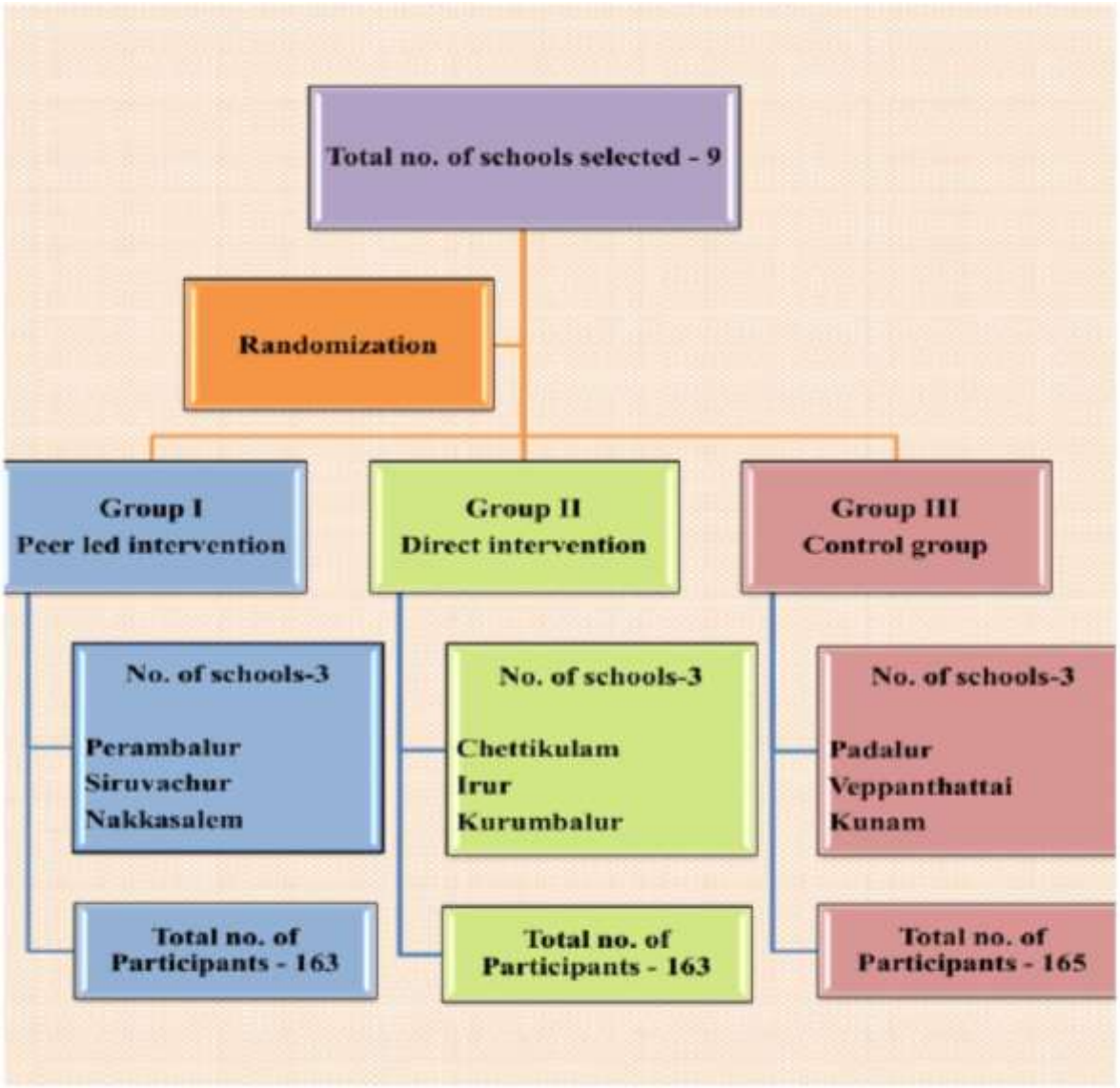

Figure 1: Selection of study schools and intervention in the three groups.

The questionnaire adopted a scoring system for ease of analysis and to demonstrate improvement. It included a knowledge score of poor:0-3, average: 4-7 and good: 8-10 and a practice score of poor: ≤4, average: 5-8 and good: ≥9. After explaining the purpose of the study, written informed consent of the participants was obtained and a pre-test was conducted for all the 486 participants in classroom of the schools selected. Questions were explained to the students and they were asked to answer them without discussing among themselves. It was made sure that all the questions were answered by the participants. On completion of the pre-test, participants were randomly allocated in group.[1-3]

In the present study, health education was the form of intervention aimed at creating awareness regarding menstruation and menstrual hygiene among the study participants. Health education material for peer led intervention and direct led intervention was developed by referring standard information education communication (IEC) materials like ANM training manual, ASHA book for adolescent health, WASH manual, UNICEF training manual.[25-28] IEC material included flipbooks and pamphlets were developed in both English and Tamil (vernacular language). In addition to this, a power point presentation was developed in both the languages. All these IEC materials were corrected and finalised by experts from the specialities of obstetrics gynaecology and community medicine. Three sessions of sequential interventions for a period of 6 months were administered to groups 1 and group 2. Session 1 was through interaction and group discussion for 30 mins. Session 2 used flipbooks, pamphlets for health education for duration of 45 mins and session 3 used audio-visual aids (powerpoint presentation) for 30 mins (Figure 2).

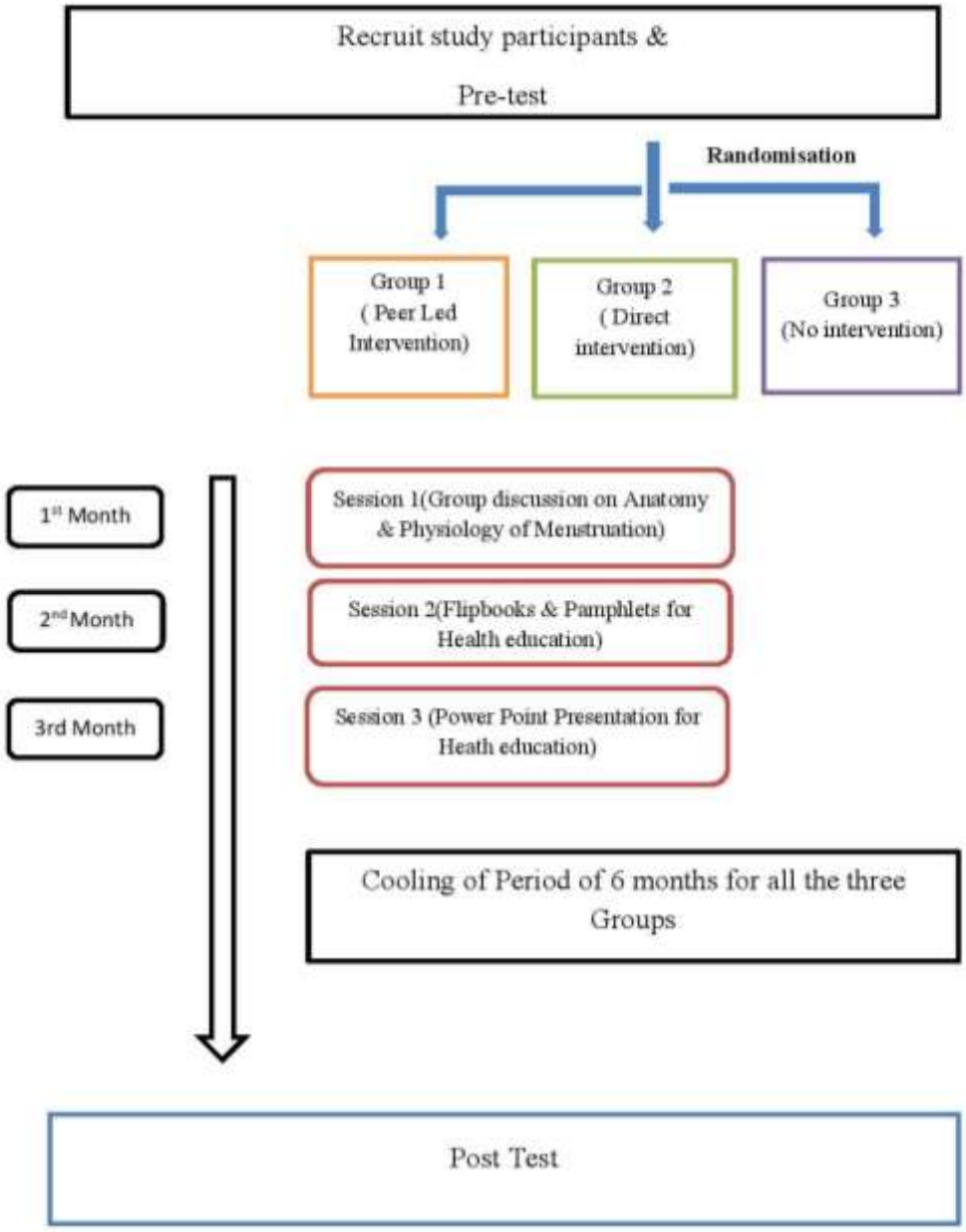

Figure 2: Steps in intervention pre and post test.

Intervention sessions were given at school class room for 1st session and in IT labs for remaining sessions. Above mentioned sessions were given for 3 months with one-month interval between sessions. The health education was given in Tamil, vernacular language to facilitate better understanding among the participants.

All the data was collected, coded, entered in microsoft excel sheet and analysed using statistical package for social sciences (SPSS) version 21. Descriptive statistics were expressed as mean and standard deviation for continuous variable and proportion for categorical variable. Comparison of pre and post-test sample mean was carried by paired t test. Analysis of variance (ANOVA) test was done to analyse the differences in group means and multiple comparisons were done using post hoc Tukey test.

Ethical clearance for conducting the study was obtained from the institutional ethics committee of human subjects (IECHS) of Dhanalakshmi Srinivasan medical college and hospital, (Number: IRCHS/DSMCH/020 and Number: IECHS/DSMCH/017).

RESULTS

In the present study, total of 491 girls were enrolled for the study. During follow up, 489 participants were available for post-test as 2 girls were considered as loss to follow up. The numbers of participants were 163, 161, and 165 in groups I, II and III, respectively.

In the present study, the majority, 355 (73%) of participants belonged to 14 years. There was no significant difference ($p>0.05$) in age distribution between the three groups. Among the participants, 470 (96.7%) were Hindus by religion ,393 (80.8%) were from nuclear families. 65% and 70% of participant's mother and father were literate, respectively. 77.9% and 89.9% of participants mother and father were employed. Among the study participants, 221 (45.4%) live in the kutcha type of house. 289 (59.5%) of the study participants belonged to lower-middle socioeconomic class (Table 1).

Following the intervention, a post-test was conducted and the results were compared with the pre-test. Knowledge and practice scores were calculated in the post-test. Following the post-test, it was observed that the percentage of participants with good knowledge had increased by 32.4% and 41.6% in group I and II respectively as compared to the pre intervention levels (Table 2). There was a decrease in the number of participants who had poor knowledge in all groups, comparatively more in group I and II. There was a significant difference ($p<0.05$) observed in group I and II in knowledge score. There was no significant difference observed in group III (Table 2).

The investigators observed improvement in practice scores by 33.8% and 52.1% in group I and II respectively (Table 2). There was a decrease in the number of participants who had poor practice score in all groups, comparatively more in group I and II. There was no significant difference observed in group III (Table 2).

A one-way analysis of variance (ANOVA) was calculated on follow up knowledge and practice score. The analysis showed significant difference at $p<0.05$ which indicates that there was a mean difference between the three groups in the follow up scores. The mean knowledge scores (SD) were 6.20 (2.53), 7.39 (2.11) and 5.30 (2.43) for groups I, II and III, respectively. Similarly, post-intervention, mean practice scores (SD) were 9.89 (2.19), 10.32 (2.23) and 8.73 (1.88) for groups I, II and III respectively (Table 3).

Table 1: Socio-demographic characteristic of study participants.

Characteristics	Intervention group I; peer education; n1=163; N (%)	Intervention group II; direct education; n2=161; N (%)	Control group II; no intervention; n3=165; N (%)	Chi square value	P value
Family type					
Nuclear	130 (79.8)	131(81.4)	131(79.4)	0.22	0.89
Joint	33 (20.2)	30(18.6)	34(20.6)		
Religion					
Hindu	159 (97.5)	150 (93.2)	161 (97.6)	5.58	0.06
Non-Hindu	4 (2.5)	11 (6.8)	4 (2.4)		
Mother's education					
Illiterate	49 (30.1)	57 (35.5)	62 (37.6)	2.17	0.33
Literate	114 (69.9)	104 (64.5)	103 (62.4)		
Father's education					
Illiterate	43 (26.4)	51 (31.7)	51 (30.9)	1.27	0.528
Literate	120 (73.6)	110 (68.3)	114 (69.1)		
Mother's occupation					
Unemployed	42 (25.2)	26 (16.1)	43 (24.8)	5.87	0.05
Employed	121 (74.8)	135 (83.8)	122 (75.1)		
Father's occupation					
Unemployed	23 (14.1)	16 (10.0)	10 (6.0)	5.89	0.05
Employed	140 (85.9)	145 (90.0)	155 (93.9)		
House type					
Kutcha	70 (42.9)	75(46.6)	77(46.7)	6.638	0.156
Semi-pucca	60 (36.8)	63 (39.1)	71 (43.0)		
Pucca	33 (20.2)	23 (14.3)	17 (10.3)		

Table 2: Comparison of knowledge and practice scores of participants pre (n1) and post (n2) intervention in the three groups.

Variables	Group	Scores	Pre-intervention n1 (%)	Post-intervention n2 (%)	Mean difference (Pre, post intervention)	SD	t value	P value
Knowledge	Group I	Poor (0-3)	92 (56.4)	28 (17.2)	-1.35583	3.17	-5.45	0.00
		Average (4-7)	65 (39.8)	76 (46.6)				
		Good (8-10)	6 (3.6)	59 (36.2)				
	Group II	Poor (0-3)	66 (41)	9 (5.6)	-1.96894	2.56	-9.74	0.00
		Average (4-7)	78 (48.4)	68 (42.2)				
		Good (8-10)	17 (10.6)	82 (52.2)				
	Group III	Poor (0-3)	67 (40.6)	49 (29.7)	0.01818	3.21	0.07	0.94
		Average (4-7)	77 (46.7)	81 (49.1)				
		Good (8-10)	21 (12.7)	35 (21.2)				
Practice	Group I	Poor (0-3)	23 (41)	6 (3.7)	1.9264	3.46	7.09	0.00
		Average (4-7)	67 (41.1)	29 (17.8)				
		Good (8-10)	73 (44.7)	128 (78.5)				
	Group II	Poor (0-3)	18 (11.2)	8 (5.0)	2.6149	3.49	9.48	0.00
		Average (4-7)	87 (54.0)	13 (8.1)				
		Good (8-10)	56 (34.8)	140 (86.9)				
	Group III	Poor (0-3)	11 (6.7)	7 (4.2)	0.2667	2.57	1.33	0.18
		Average (4-7)	73 (44.2)	50 (30.3)				
		Good (8-10)	81 (49.1)	108 (65.5)				

Table 3: Post intervention comparison of follow up knowledge and practice scores between the three groups.

Variables	Group	Mean	SD	F	P value
Knowledge	Group I	6.209	2.53	32.081	0.0
	Group II	7.391#	2.113		
	Group III	5.297	2.4301		
Practice	Group I	9.89	2.19	24.959	0.0
	Group II	10.32*	2.23		
	Group III	8.73	1.88		

#group II demonstrated increase in mean knowledge scores post intervention as compared to other groups; *group II demonstrated increase in mean practice scores post intervention as compared to other groups.

Table 4: Multiple comparisons of knowledge and practice scores between groups post intervention using post hoc Tukey test.

Dependent variables	(I)	(J)	Mean difference (I-J)	Standard error	Significance
Post intervention knowledge score	Group I	Group II	-1.1827*	0.2629	0
		Group III	.9116*	0.2612	0.002
	Group II	Group I	1.1827*	0.2629	0
		Group III	2.0943*	0.2621	0
	Group III	Group I	-.9116*	0.2612	0.002
		Group III	-2.0943*	0.2621	0
Post intervention practice score	Group I	Group II	-0.4396	0.2345	0.147
		Group III	1.1562*	0.233	0
	Group II	Group I	0.4396	0.2345	0.147
		Group III	1.5959*	0.2337	0
	Group III	Group I	-1.1562*	0.233	0
		Group	-1.5959*	0.2337	0

*denotes significant difference observed between the two groups.

Multiple comparisons Tukey test was used to determine whether groups differed from each other in the knowledge and the practices scores following the intervention. There was a statistically significant difference observed in knowledge score between group I versus group II (p=0.001), group I versus group III (p=0.002), group II versus group III (p=0.001). When comparing the mean difference, it is evident that knowledge score of group II is comparatively more than group I (Table 4).

Regarding post-intervention practice scores there was a statistically significant difference observed between the group I versus group III (p=0.001), group II versus group III (p=0.001). However, there were no significant differences observed between the group I and group II (p=0.147). When comparing the mean difference, it is evident that practice score of the group II is comparatively more than group I (Table 4).

DISCUSSION

To our present knowledge, this study is the first attempt to compare the relative effectiveness of direct intervention over peer-led intervention on knowledge and practices of menstrual hygiene among adolescent girls which makes comparison with the other studies a difficult proposition.

In the present study, the majority of study participants were of 14 years which is comparable to multiple studies where the age of participants was similar.[11,29-31]

In the present study, 80% of study participants belonged to a nuclear family which is similar to study done in South India by Zaidi et al where 88% of participants belonged to nuclear family.[11] In the present study 65.6% and 70.3% of participants mothers and fathers were literate. This result is comparable with literacy rate of Perambalur district, which is 73.1% and 84.6% for females and males, respectively. 32,33

In the present study, post-intervention there was a significant increase in the percentage of participants with good knowledge and practice scores both in the peer led (group I) as well as the direct intervention (group II) compared to the control group (group III).The percentage of participants with good knowledge scores increased by 32.4% and 41.6% in group I and II respectively in the present study, which is comparable to a study conducted in Bangladesh by Haque et al which observed a 31.4% increase in follow up knowledge score post-intervention.[3] Similarly, in the present study, the percentage of participants with good practice score increased by 33.8% and 52.1% in group I and II respectively post intervention which is comparable to the study conducted by Haque et al in Bangladesh which observed a 60.1% increase in good practice score following intervention.[3]

Post-intervention, there present study observed a significant increase in mean knowledge and mean practice scores in peer led (group I) and direct intervention (group II) as compared to the control group (group III) which is comparable with study conducted by Anitha et al in Chennai where the mean knowledge and practice score post intervention were significantly higher.[34]

In order to compare the relative effects of intervention among the groups, Post-hoc analysis was conducted using Tukey HSD (honest significant difference). The direct intervention group (group II) showed significant increase in both the knowledge and practice scores as compared to the other two groups. There are various studies which have demonstrated the impact of educational intervention on menstrual hygiene, but comparison of direct and peer-led intervention is not to be found.[8,20-23,35,36] In recent intervention studies conducted at Uganda, the investigators observed a significant improved in knowledge (reduce anxiety to menstruation) and practices (effective pain management) following intervention.[35,36] A study conducted in western Nigeria by Ademola evaluated the role of school-based education involving teacher-led and peer-led intervention on reproductive health of adolescents but not specifically on menstrual hygiene.[37] In study conducted by Ramaiya et al in India emphasis that social and behavioural change communication (SBCC) intervention plays a positive role in influencing the knowledge, attitudes, interpersonal communication, restrictions and MHM of adolescent girls.[38]

In present study, the direct intervention group showed more significant increase in knowledge and practices among participants owing to pictorial demonstration. Peer led intervention group also showed improvement but less than direct intervention group which can be attributed to hesitation of the volunteers to carry out the health education more effectively to the participants.

CONCLUSION

The study concludes that health education in the form of direct intervention by the trained professional has a higher impact on dispelling myths, misconceptions, taboos and adopting healthy menstrual practices among adolescence females in India. The investigators recommend that health education by a trained professional should be initialized and internalized as a programme on MHM in school curriculum.

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