The Effect of Community-Based Health Education Intervention on Management of Menstrual Hygiene among Rural Indian Adolescent Girls

A.R. Dongre, Dr Sushila Nayar School of Public Health, Mahatma Gandhi Institute of Medical Sciences, Sewagram – 442 102, India

P.R. Deshmukh, Dr Sushila Nayar School of Public Health, Mahatma Gandhi Institute of Medical Sciences, Sewagram – 442 102, India

B.S. Garg, Dr Sushila Nayar School of Public Health, Mahatma Gandhi Institute of Medical Sciences, Sewagram – 442 102, India

Pradeep Deshmukh, Professor, Dr Sushila Nayar School of Public Health, Mahatma Gandhi Institute of Medical Sciences, Sewagram, India, Pin – 442102, Tel: 91-7152-201650, Fax: 91-7152-284730, Email: prdeshmukh@gmail.com, prdeshmuhk@yahoo.com

Abstract

Objective: To study the effect of a community-based health education intervention on awareness and behaviour change of rural adolescent girls regarding their management of menstrual hygiene. **Materials and Methods:** A participatory-action study was undertaken in Primary Health Centres in 23 villages in Anji, in the Wardha district of Maharashtra state. Study subjects were unmarried rural adolescent girls (12–19 years). We conducted a needs assessment for health messages with this target audience, using a triangulated research design of quantitative (survey) and qualitative (focus group discussions) methods. Program for Appropriate Technology for Health (PATH) guidelines were used to develop a pre-tested, handmade flip book containing needs-based key messages about the management of menstrual hygiene. The messages were delivered at monthly meetings of village-based groups of adolescent girls, called *Kishori Panchayat*. After 3 years, the effect of the messages was assessed using a combination of quantitative (survey) and qualitative (trend analysis) methods. **Results:** After 3 years, significantly more adolescent girls (55%) were aware of menstruation before its initiation compared with baseline (35%). The practice of using ready-made pads increased significantly from 5% to 25% and reuse of cloth declined from 85% to 57%. The trend analysis showed that adolescent girls perceived a positive change in their behaviour and level of awareness. **Conclusion:** The present community health education intervention strategy could bring significant changes in the awareness and behaviour of rural adolescent girls regarding management of their menstrual hygiene.

Introduction

Menstruation is a physiological phenomenon unique to females that begins in adolescence. In India, about 50% of rural adolescent girls have no information on or understanding of this basic biological process (CREA 2005). According to Khanna et al. (2005), due to lack of information on this natural phenomenon and culturally divergent beliefs and practices, rural adolescent girls in India often manage menstruation in an unsafe manner that leads to reproductive tract infections (RTIs) and other reproductive health problems. Younis et al. (1993) reported that women who practise poor menstrual hygiene had a significantly higher risk of RTIs (odds ratio of 1.66) compared with women with better menstrual hygiene. Wasserheit et al. (1989) found that women who used rags to absorb menstrual bleeding suffered from RTIs more frequently than women who used sterilized material (90% versus 40%). Bali and Bhujwala (1969) found that women with the poorest level of menstrual hygiene had the highest infection rates. RTIs result in adverse reproductive health outcomes such as infertility, repeated abortions and ectopic pregnancies (Buchan et al, 1990; Wasserheit 1989). Menstrual hygiene management practices developed in adolescence are likely to persist in adult life (Khanna et al, 2005). Germain et al. (1992) have recommended interventions to change behaviour directed toward improving menstrual hygiene as a strategy to prevent RTIs and to promote reproductive health.

Little is known about the effect of health education intervention on how adolescent girls manage their menstrual hygiene. Taking into consideration the recommendations for health education research in developing countries by Loevinsohn (1990), the present article focuses on the effect of community-based health education intervention on rural adolescent girls' awareness and behaviour regarding management of their menstrual hygiene.

Materials and Methods

The Kasturba Rural Health Training Centre (KRHTC) (a peripheral centre of the Dr Sushila Nayar School of Public Health, Mahatma Gandhi Institute of Medical Sciences [MGIMS], Sewagram) in Anji undertook the present study in Primary Health Centres in 23 villages in Anji, with a population of 31,482. Unmarried adolescent girls constituted 8% of the total population. The study area is located in the Wardha district of Maharashtra state. Study subjects were unmarried adolescent girls aged 12–19 years. The study was conducted in two phases. The first comprised the needs assessment and development of low-cost, needs-based health education material. The second involved disseminating health messages and assessing the effect of the community-based health education.

Phase I: Needs Assessment and Development of Health Education Material

Needs Assessment

A triangulated research design of quantitative (survey) and qualitative (focus group discussions, or FGDs) methods was used for the needs assessment for health messages. Considering the rough estimate of adolescent girls' proportion, which could have knowledge and practices of study variables as 0.5, 95% confidence interval and 5% precision, the minimum sample size required was 384 (Lwanga and Lemeshow, 1991). We increased this number by 10% to cover non-responses. Thus, 420 unmarried adolescent girls (12–19 years) were to be covered. To develop a sampling frame, a detailed house-listing exercise was carried out in the study villages. Finally, the sample was drawn systematically from the village sampling frames. The response rate was about 91%. After obtaining informed consent, a trained female social worker interviewed 381 adolescent girls, using a pre-designed and pre-tested questionnaire in home visits. The structured questionnaire covered knowledge and practices regarding menstrual hygiene. The prevalence RTIs and sexually transmitted diseases (STDs) was judged by self-reported symptoms. Respondents were told a few symptoms of RTIs and STDs and were asked whether they had had any during the 3 months prior the survey. Five percent of questionnaires were checked to ensure quality of data. The data was entered and analyzed using the Epi Info 6.0 software package (Centre for Disease Control and Prevention, Atlanta,

Georgia, USA). Later, three FGDs were conducted with a group of adolescent girls to understand the various reasons behind their current menstruation management practices. No new information ensued after the first two FGDs. A note taker carefully recorded the discussion. Data collection was carried out in December 2003.

Development of Low-Cost, Needs-Based Health Education Material

PATH (Program for Appropriate Technology for Health) guidelines were adopted to develop health education material (PATH 1997). A team consisting of a social worker, a medical intern and an Auxiliary Nurse Midwife (ANM) developed the health messages after carefully reviewing the quantitative and qualitative information from the survey and FGDs, respectively. The health messages focused on (1) awareness regarding menstruation, (2) importance of its acceptance as a normal phenomenon and (3) hygiene to be maintained during menstruation. The rough draft of health education material consisted of handmade sketches and handwritten messages. This draft was presented to a local group of adolescent girls to test if the sketches and messages conveyed the appropriate meaning. Modifications suggested by the group were made before the final handwritten flip book was prepared. Pictures were socially and culturally relevant, and messages were written in the local language, *Marathi*, incorporating local terms. Subsequently, the field workers used photocopies of the flip book to disseminate the health messages among adolescent girls.

Phase II: Dissemination of Health Messages and Assessment of Effect

Dissemination of Health Messages

One *Kishori Panchayat* (KP, forum of adolescent girls) was formed in each of the 23 villages. This informal group of 12 to 20 adolescent girls from the same village acted as a platform for disseminating health messages during the monthly meeting. A female social worker or ANM delivered the health messages to the girls of the village KP, using the health education material previously described. Later, KP members arranged a quarterly meeting for all adolescent girls in their respective villages. All adolescent girls of the village constituted *Kishori Sabha*. In this meeting, the previously sensitized girls from the KP delivered the messages using the same health education material. Since flip book development was a participatory team exercise with the target audience, there was no need for separate orientation of KP girls. Although *Kishori Sabhas* were supervised by a female social worker, the adolescent girls were the active agents for change. In this strategy, sensitized KP members were used to ensure participation of other adolescent girls in the village.

Assessment of Effect of Community-Based Health Education

In April 2007, triangulated research of quantitative (survey) and qualitative (trend analysis) methods was used to look for change in behaviour of the target audience. About 383 unmarried adolescent girls (12–19 years) were selected by simple random sampling and were interviewed using the same pre-designed and pre-tested questionnaire. A trend analysis was undertaken with a representative group of KP members (one representative from each KP) to discover their perception of change in practices over the period of 3 years. The girls were asked to draw a trend of perceived behaviour change on chart paper. In the first column, they recorded their perceptions of a specific practice prior to the study; in the second, they recorded their current perception. The group discussed the various practices and assessed them for every 10 girls in the village.

Results

Characteristics of the Sample

There was no significant difference in age distribution of respondents between 2003 and 2007 (Table 1). More than 75% of girls responding to the survey were attending school. In 2003 and 2007 respectively, 71.1% and 75.5% respondents were menstruating. The percentage of adolescent

girls who were aware of menstruation before its onset increased significantly, from 35.1% to 55.4%. In 2007, 160 (55.4%) menstruating girls knew about the menstrual cycle prior to its onset. Their sources of information were mothers (17%), KP members (24%), female school teachers (13%) and friends (45%). The percentage of adolescent girls who were members of community-based organizations increased from 4.5% to 28.5%. Similarly, participation of adolescent girls in village-based health programs increased significantly from 2.1% to 46.5% (Table 2.).

Table 1. Age distribution of adolescent girls

Age in completed years	Year 2003 *N* (%)	Year 2007 *N* (%)
12	55 (14.4)	40 (10.4)
13	57 (15)	52 (13.6)
14	48 (12.6)	50 (13.1)
15	49 (12.9)	51 (13.3)
16	49 (12.9)	60 (15.7)
17	52 (13.6)	55 (14.4)
18	48 (12.6)	47 (12.3)
19	23 (6)	28 (7.3)
Total	**381 (100)**	**383 (100)**

Table 2. Background information about respondents

Indicators	Year 2003 (*n* = 381)		Year 2007 (*n* = 381)	
	N (%)	95% CI	*N* (%)	95% CI
School going adolescent girls	294 (77.2)	72.6 – 81.3	319 (83.2)	79.2 – 86.9
Currently menstruating girls*	271 (71.1)	66.2 – 75.6	289 (75.5)	70.8 – 79.6
Membership in community based groups*	17 (4.5)	2.6 – 7.0	109 (28.5)	23.9 – 33.3
Participation in health education session in last three months.*	8 (2.1)	0.9 – 4.0	178 (46.5)	41.4 – 51.6

*$p < .05$

Effect of Health Education in Terms of Awareness and Behaviour Change

The average age of menarche was 14 years. Among currently menstruating girls, ready-made pad users increased significantly, from 5.2% to 24.9%. Conversely, cloth users declined from 94.8% to 72.7%. The practice of taking a bath during menstruation was almost universal. The percentage of adolescent girls observing dietary restrictions during menstruation showed marginal decline (Table 3). Reusing cloth declined from 84.8% to 57.1%. Notably, among the reusers of cloth, the practices of washing it with soap and water and sun drying increased from 86.2% to 94.2% and 78.4% to 90.0% respectively (Table 4). As seen in the trend analysis, the group of adolescent girls perceived similar behaviour changes (Figure 1).

Table 3. Distribution of currently menstruating adolescent girls by type of cloth used during menstruation, awareness before its onset and restrictions

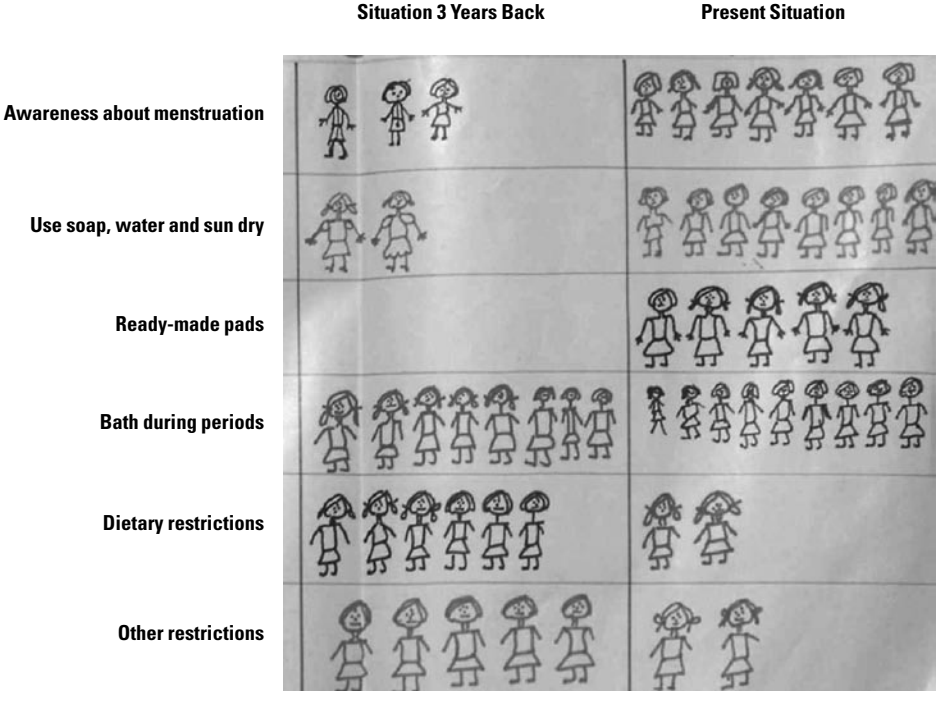
Indicators	Year 2003 (*n* = 271)		Year 2007 (*n* = 289)	
	N (%)	95% CI	*N* (%)	95% CI
Adolescent girls aware of menstruation before its onset*	95 (35.1)	29.4 – 41.0	160 (55.4)	49.4 – 61.2
Piece of cloth*	257 (94.8)	91.5 – 97.1	210 (72.7)	67.1 – 77.7
Readymade pads*	14 (5.2)	2.9 – 8.5	72 (24.9)	20.0 – 30.3
Follow dietary restrictions	56 (20.7)	16.0 – 25.9	48 (16.6)	12.5 – 21.4

*p < .05

Table 4. Washing and drying practices among those who reuse the cloth

Indicators	Year 2003 (*n* = 218)		Year 2007 (*n* = 120)	
	N (%)	95% CI	*N* (%)	95% CI
Wash reused cloth with soap/powder/Dettol	188 (86.2)	80.9 – 90.5	113 (94.2)	88.3 – 97.6
Sun dry	171 (78.4)	72.4 – 83.7	108 (90.0)	83.2 – 94.7
Shade	47 (21.6)	16.3 – 27.6	12 (10.0)	5.3 – 16.8

Figure 1. Trend analysis with the group of adolescent girls: Their perception of change in menstrual management



In 2003, 8% of girls (16–19 years) reported any one of the RTI/STD symptoms in the 3 months prior to the survey. Of those girls, 54% received medical treatment from a skilled provider. In 2007, again, 8% (16–19 years) reported any one of the RTI/STD symptoms in last 3 months, yet 87% received medical treatment from a skilled provider.

Discussion

The community-based intervention strategy focused on the social mobilization of adolescent girls and peer groups to spread the messages using simple handmade and locally prepared flip books.

Gupta et al. (2004) have emphasized a need for developing information, education and communication strategies to focus on raising awareness of reproductive-health and gender-related issues. Devi et al. (1994) have suggested approaches such as educational television programs, school nurses or health personnel, compulsory sex education in the school curriculum and education of parents. In the present study, only 13% and 17% of girls got firsthand information about menstrual cycles from their female school teachers and mothers, respectively. Notably, 69% of adolescent girls got information regarding their menstrual cycle and its hygienic management prior to its onset from their friends and KP members. Thus, in a cultural milieu where parents and teachers cannot be relied on to provide adequate information on and support for reproductive health, community-based organizations may step in to fill this gap (CREA 2005). This is relevant where girls are denied access to information about reproductive and sexual health and are expected to not ask questions about such issues because they are unmarried and female (CREA 2005). The social mobilization skills of an Accredited Social Health Activist (ASHA), a village-based female health worker under the National Rural Health Mission (NRHM) of Government of India, could thus be utilized for overcoming the social barriers to an effective community-based adolescent-friendly program. As an ASHA would be trained in public health pedagogy, she should be given the responsibility of such an effort at the village level along with the Anganwadi* worker. However, such an effort needs to be tested.

Very few studies of community-based health education interventions to improve management of menstrual hygiene among adolescent girls are available to compare with our results. Swasthya, a Delhi-based nongovernmental organization (NGO), also reported improvement in menstrual hygiene behaviour among adolescents through messages disseminated by community-based worker in the slums of Delhi (International Centre for Research on Women 2006). Chiou et al. (2007) in Taiwan developed a dysmenorrheal self-care pamphlet in quasi-experimental design for female adolescents and tested the effect. Results revealed a significant increase in the experimental group members' dysmenorrhea-related knowledge and self-care behaviour but not in their attitudes. In the present study, the marginal decline in dietary restrictions and other social and religious restrictions reflected a more positive attitude towards menstruation. Although there was significant improvement in the hygienic management of menstruation, the proportion of girls (16–19 years) with a history of RTIs/STDs did not change. There was, however, a significant improvement in health-seeking behaviour. Cooke (2006) also emphasized a need for community sensitization and education of the adolescent girls regarding menstrual management.

According to Loevinsohn (1990), the involvement of community in health education efforts has rarely been seen, and the use of more participatory techniques had been advocated many times before. In the present study, the overall research process and intervention was participatory in nature; the target audience was involved in the needs assessment, in developing health education material, in disseminating messages and, finally, in evaluating the study. The methods adopted were feasible, flexible and required minimal resources. Carrying out the needs assessment before the development of health education material and participatory development of health messages provided an opportunity to understand the target audience for the flip book. This approach could be a useful resource for poor NGOs working in rural parts of developing countries.

However, limitations of the study should be kept in mind. This was a small-scale study in one Primary Health Centre area. It needs to be tested at a larger scale to confirm the findings. In the

present study, there may have been reporting biases, as the study focused on key behaviours that are difficult to verify objectively.

Conclusion

To conclude, the present community-based participatory health education strategy could bring significant changes in awareness and behaviours of rural adolescent girls regarding hygienic management of menstrual periods. A similar strategy may be useful for resource-poor NGOs working in developing countries.

Acknowledgements

We acknowledge financial assistance from Aga Khan Foundation and USAID under the Child Survival Grant with the cooperative agreement GHS-A-00-03-00015-00.

References

Bali P. and R.A. Bhujwala. 1969. "A Pilot Study of Clinical Epidemiological Investigations of Vaginal Discharges in Rural Women." *The Indian Journal of Medical Research* 57: 228–9.

Buchan H., L. Villard-Mackintosh, M. Vessey, D. Yeates and K. Melherson. 1990. "Epidemiology of Pelvic Inflammatory Disease in Parous Women with Special Reference to Intrauterine Device Use." *British Journal of Obstetrics and Gynaecology* 97: 780.

Chiou M.H., H.H. Wang and Y.H. Yang. 2007. "Effect of Systematic Menstrual Health Education on Dysmenorrheic Female Adolescents' Knowledge, Attitudes, and Self-Care Behavior." *The Kaohsiung Journal of Medical Sciences* 23(4): 183–90.

Cooke J. 2006. "Practical Interventions to Meet the Menstrual Hygiene Needs of School Girls: a Case Study from Katakwi, Uganda." Retrieved August 30, 2007. <https://dspace.lib.cranfield.ac.uk/bitstream/1826/1390/1/JeanetteCooke_Thesis_2006.pdf >

Creating Resources for Empowerment in Action (CREA). 2005. *Adolescent Sexual and Reproductive Health and Rights in India.* New Delhi: CREA.

Devi K. and P. Ramaiah. 1994. "a Study on Menstrual Hygiene among Rural Adolescent Girls." *Indian Journal of Medical Sciences* 48(6): 139–43.

Germain A., K.K. Holmes, P. Piot and J.N. Wasserheit. (Eds.) 1992. *Reproductive Tract Infections: Global Impact and Priorities for Women's Reproductive Health* p. 337. New York, NY: Plenum Press.

Gupta N., A.K. Mathur, M.P. Singh and N.C. Saxena. 2004. "Reproductive Health Awareness of School Going, Unmarried, Rural Adolescents." *Indian Journal of Pediatrics* 71(9): 797–801.

Khanna A., R.S. Goyal, and R. Bhawsar. 2005. "Menstrual Practices and Reproductive Problems: a Study of Adolescent Girls in Rajasthan." *Journal of Health Management* 7: 91.

Loevinsohn B.P. 1990. "Health Education Interventions in Developing Countries: a Methodological Review of Published Articles." *International Journal of Epidemiology* 9(4): 788–94.

Lwanga S.K. and S. Lemeshow. 1991. *Sample Size Determination in Health Studies: a Practical Manual.* Geneva: WHO.

Zimmerman M., N. Newton, L. Frumin, S. Wittet. 1996. *Developing Health and Family Planning Materials for Low-Literate Audiences: a Guide.* Washington, D.C.: Program for Appropriate Technology in Health. Retrieved February 5, 2004. <http://www.path.org/publications/pub.php?id=262>

International Centre for Research on Women. 2006. *Improving the Reproductive Health of Married and Unmarried Youth in India.* Retrieved August 20, 2007. <http://www.icrw.org/docs/publications-2006/R-3_new.pdf >

Wasserheit J. 1989. "The Significance and Scope of Reproductive Tract Infections Among Third World Women." *International Journal of Gynaecology and Obstetrics* 30 (Suppl. 3): 145–68.

Wasserheit J., J.R. Harris, J. Chakraborty, A.B. Kay and K. Mason. 1989. "Reproductive Tract Infections in a Family Planning Population in Bangladesh." *Studies in Family Planning* 20(2): 69–80.

Younis N., H. Khattab, Z. Huda, M. El Mawaheb, F.A. Mohamed and M.F. Abdel. 1993. "A Community Study of Gynecological and Related Morbidities in Rural Egypt." *Studies in Family Planning* 24(3): 175–86.