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Original Article

Transforming Menstrual Hygiene Awareness and Practices Among Adolescent Girls in Bisha, KSA: Bridging Knowledge and Cultural Barriers

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Abstract - *Adolescent girls face physiological, social and psychological health dilemma in present era of health care advancement of robotic surgeries in concern with Menstrual Hygiene Management (MHM). Especially in culturally conservative settings such as Bisha, Kingdom of Saudi Arabia (KSA),adolescents have limited access to evidence based menstrual education and they are overwhelmed with misinformation and stigma. The present study focused on the effectiveness of a Structured Health Education Program (SHEP) in improving menstrual knowledge, hygiene practices, and sociocultural perceptions among adolescent girls. Mixed Method design with one group pre and post test for quantitative assessment of 60 adolescent girls and phenomenological design for collection of qualitative data from six participants. Quantitative data analysed using paired t test and qualitative data using thematic analysis. The findings are significant to generate evidence to support the effectiveness of SHEP as the mean knowledge score increased from 48.45% (SD=9.09) in the pre-test to 66.67% (SD=7.55) in the post-test, at $t = -12.41$, $p < 0.001$. the mean score rising from 31.10% (SD=11.95) to 83.87% (SD=10.36) ($t = -25.80$, $p < 0.001$ for hygiene practices. In the aspect of sociocultural beliefs decreased significantly, with the mean score dropping from 69.73% (SD=15.67) to 25.45% (SD=9.14) ($t = 20.16$, $p < 0.001$). Thematic analysis added significance to these results, revealing increased confidence, reduced stigma, and enhanced peer communication. Hence this research findings recommend the importance of menstrual hygiene education in schools and parental involvement in improving adolescent girls' menstrual health in all the aspects of health defined by World Health Organization.*

Keywords - *Adolescent health, Menstrual hygiene menstruation practices, Sociocultural beliefs, Structured health education program.*

1. Introduction

Menstruation is a basic biological function of adolescent girls. Management of hygiene during the menstrual cycle is often disregarded due to ignorance and cultural taboos, which lead to poor menstrual hygiene practices. Poor menstrual hygiene practices and lack of awareness have a serious health impact on adolescents' health.

Multiple studies have given the significance of the introduction of Structured Health Education Programs (SHEPs) in the curricula to enhance culturally appropriate interventions to enhance the confidence of Adolescents in dignified management of their hygiene during menstruation. This research is the need of the hour, as structured educational initiatives can play a role in addressing sociocultural barriers and improving menstrual hygiene outcomes among adolescent girls.

2. Materials and Methods

A mixed-method approach was used to assess the effectiveness of the Structured Health Education Program (SHEP) in terms of knowledge, hygiene practices, and sociocultural views related to menstrual hygiene conducted for adolescent girls in Bisha, Saudi Arabia.

2.1. Study Design

A multi-method research design was used:

- Phase I: A pre-experimental one-group pre-test and post-test quantitative study.
- Phase II: A qualitative phenomenological approach.

2.2. Participants and Sampling

Samples were enrolled using a purposive sampling technique, a type of non-probability sampling.

- Phase I: 60 adolescent girls from selected secondary schools in Bisha, KSA.
- Phase II: 6 adolescent girls participated in in-depth interviews.

2.3. Data Collection Tools

1. Structured Knowledge Questionnaire – Assessing knowledge and preparation for menstruation.
2. Three-Point Likert Attitude Scale – Measuring hygiene practices and sociocultural beliefs.
3. Semi-structured interviews – Exploring lived experiences of menstrual hygiene management.

3. Results

The data was analysed using descriptive and inferential statistics. To present data distribution in frequency and percentage and compare the pre and post-test, tabular and graphical forms were used.

To assess the effectiveness of the Structured Health Education Program (SHEP) on menstrual awareness, hygiene habits, and sociocultural perceptions among teenage girls. Paired t-tests were performed. Thematic analysis was used to explore the in-depth qualitative aspect of the study.

Table 1. Distribution of the sample based on sociodemographic variables

Variable	Category	Frequency (n=60)	Percentage (%)
Age Group (years)	10-12	15	25.0
	13-15	25	41.7
	16-19	20	33.3
Residence	Urban	35	58.3
	Rural	25	41.7
Parental Education	No Formal Education	5	8.3
	Primary	15	25.0
	Secondary	25	41.7
	Higher	15	25.0
Family Size	≤4 members	10	16.7
	5-7 members	30	50.0
	>7 members	20	33.3

The table presents the distribution of the study sample based on key sociodemographic variables, including age, residence, parental education level, and family size. Maximum participants belonged to the age group of 13-15 years (41.7%), and were residents of an urban area (58.3%). Parents were educated upto secondary school (41.7%) and family size 5-7members (50%).

Table 2. Knowledge and Awareness Levels (Pre-Test vs. Post-Test)

Knowledge Level	Pre-Test Frequency (n=60)	Pre-Test Percentage (%)	Post-Test Frequency (n=60)	Post-Test Percentage (%)
High Knowledge	10	16.7	40	66.7
Moderate Knowledge	20	33.3	15	25.0
Low Knowledge	30	50.0	5	8.3

In the pre-test, 50.0% of the participants exhibited low knowledge, while 33.3% showed moderate knowledge, and merely 16.7% displayed high knowledge. Post-test outcomes show a notable enhancement, as 66.7% of participants reached high knowledge levels, whereas those with moderate and low knowledge fell to 25.0% and 8.3%, respectively. These results indicate that the intervention successfully improved participants' awareness of menstrual hygiene.

Table 3. Hygiene Practices (Pre-Test vs. Post-Test)

Hygiene Practice	Pre-Test Frequency (n=60)	Pre-Test Percentage (%)	Post-Test Frequency (n=60)	Post-Test Percentage (%)
Regularly changes sanitary pads (4+ times/day)	15	25.0	45	75.0
Uses proper disposal methods	18	30.0	50	83.3
Maintains personal hygiene (washing hands, etc.)	22	36.7	52	86.7

The table shows a comparison of cleanliness methods prior to and following the intervention. In the pre-test, merely 25.0% of participants consistently changed their sanitary pads at least four times daily, while this rose significantly to 75.0% in the post-test. In the same way, the proportion of participants utilizing appropriate disposal methods increased from 30.0%

to 83.3%. Moreover, the percentage of individuals practicing personal hygiene, like handwashing, rose from 36.7% to 86.7%. These findings suggest a significant enhancement in menstrual hygiene behaviors after the intervention.

Table 4. Sociocultural Beliefs (Pre-Test vs. Post-Test)

Sociocultural Beliefs	Pre-Test Frequency (n=60)	Pre-Test Percentage (%)	Post-Test Frequency (n=60)	Post-Test Percentage (%)
Avoids religious activities during menstruation	40	66.7	20	33.3
Believes in food restrictions (avoiding cold/spicy food)	38	63.3	18	30.0
Feels embarrassed discussing menstruation	42	70.0	15	25.0

Pre-intervention, 66.7% of participants avoided religious activities during menstruation, but this dropped to 33.3% post-intervention, suggesting a shift toward more informed beliefs. Similarly, the percentage of girls who believed in food restrictions (avoiding cold/spicy food) decreased from 63.3% to 30.0%, indicating increased awareness that dietary habits do not negatively impact menstruation. The most notable change was observed in attitudes towards discussing menstruation; pre-test data showed 70.0% of participants felt embarrassed discussing the topic, which significantly reduced to 25.0% after the educational program. These findings highlight the effectiveness of the intervention in challenging cultural taboos and misconceptions surrounding menstruation, promoting a more open and informed perspective among adolescent girls.

Table 5. Psychological and Social Impact (Pre-Test vs. Post-Test)

Psychological/Social Factor	Pre-Test Frequency (n=60)	Pre-Test Percentage (%)	Post-Test Frequency (n=60)	Post-Test Percentage (%)
Experiences anxiety/embarrassment	45	75.0	18	30.0
Avoids school due to menstruation	35	58.3	10	16.7
Open to discussing menstruation with peers	12	20.0	48	80.0

Preintervention, 75.0% of participants indicated feelings of anxiety or embarrassment concerning menstruation, which notably dropped to 30.0% after the intervention. Likewise, 58.3% of respondents skipped school while menstruating, but this reduced to 16.7% post-program, indicating enhanced confidence and improved coping methods. Additionally, there was a significant rise in willingness to talk about menstruation with friends, increasing from 20.0% before the test to 80.0% after the test, indicating a constructive change in communication and perspective on menstrual health. These results indicate that the educational program significantly contributed to diminishing stigma, easing anxiety, and promoting open conversations about menstruation, ultimately creating a more supportive and knowledgeable social atmosphere for adolescent girls.

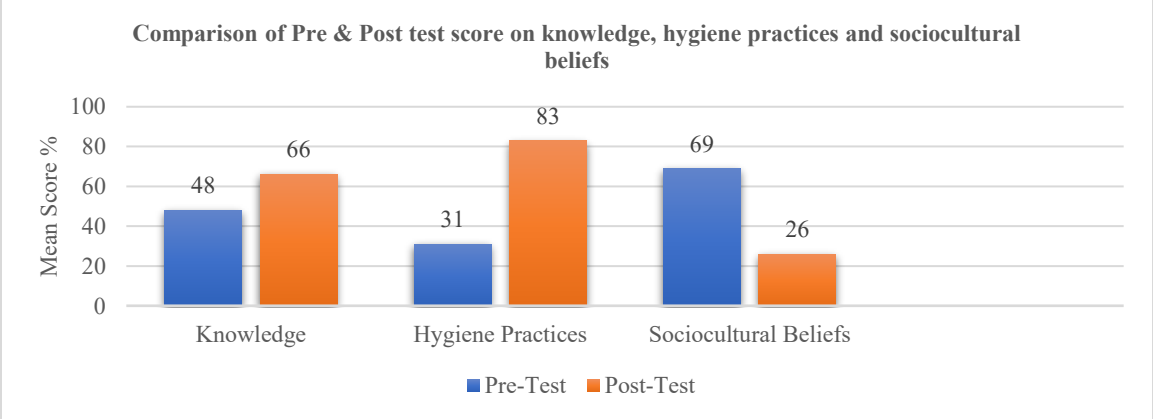

Fig. 1 Comparison of Pre & Post test scores on knowledge, hygiene practices, and sociocultural beliefs

The pre-test scores (blue bars) indicate relatively lower levels across all three categories, particularly in hygiene practices and knowledge, suggesting limited awareness and adherence to proper menstrual hygiene before the intervention. Post-test scores (orange bars) show a significant improvement in all areas. The most notable increase is in hygiene practices, which rose from approximately 31.1% to 83.9%, highlighting the intervention's effectiveness in promoting proper menstrual hygiene. Knowledge levels also improved considerably, increasing from 48.5% to 66.7%, demonstrating enhanced awareness post-intervention. In contrast, adherence to sociocultural beliefs dropped significantly, falling from 69.7% to 25.5%, illustrating a beneficial movement away from limiting traditional views. The results indicate that the intervention effectively increased awareness about menstrual health, promoted better hygiene practices, and addressed sociocultural taboos, resulting in adolescent girls who are more knowledgeable and empowered.

Table 6. Paired t-test analysis to assess the statistical significance of the difference between the Pre and post-test Mean scores

Variable	Pre-Test Mean (%)	Post-Test Mean (%)	Pre-Test Std Dev	Post-Test Std Dev	t-Statistic	p-Value
Knowledge	48.45	66.67	9.09	7.55	-12.41	4.33×10^{-18}
Hygiene Practices	31.10	83.87	11.95	10.36	-25.80	7.85×10^{-34}
Sociocultural Beliefs	69.73	25.45	15.67	9.14	20.16	3.81×10^{-28}

The statistical analysis of the study reveals a significant improvement in knowledge, hygiene practices, and sociocultural beliefs regarding menstrual hygiene among adolescent schoolgirls following the intervention. The mean knowledge score increased from 48.45% to 66.67%**,** with a highly significant p-value of 4.33×10^{-18}**,** indicating a substantial enhancement in awareness. Similarly**,** hygiene practices improved remarkably, with the mean score rising from 31.10% to 83.87%**,** and a p-value of 7.85×10^{-34}**,** demonstrating a significant positive behavioral change. Moreover, sociocultural beliefs shifted considerably**,** as the mean score dropped from 69.73% to 25.45%**,** indicating a reduction in restrictive beliefs, with a p-value of 3.81×10^{-28}**.** These results confirm that the intervention was highly effective in improving menstrual hygiene management, challenging cultural taboos, and promoting healthier practices among the participants. Since all p-values are extremely small (<0.05)**,** the differences between pre-test and post-test results are highly statistically significant, confirming the effectiveness of the intervention. The p-values indicate a statistically significant improvement in all categories after the structured health education program.

3.2. Quantitative Findings

A comparative analysis of pre-test and post-test results showed:

- Knowledge levels improved significantly, with 66.7% of students achieving high knowledge post-intervention (vs. 16.7% pre-test).
- Hygiene practices improved, particularly in sanitary pad changes (75.0%) and personal hygiene maintenance (86.7%) post-test.
- Restrictive sociocultural beliefs declined, with belief in food restrictions dropping from 63.3% to 30.0%.
- Psychological distress reduced, with school absenteeism due to menstruation decreasing from 58.3% to 16.7%.
- Sociocultural Beliefs**:** Reduction in adherence to restrictive cultural practices and myths surrounding menstruation.

3.3. Qualitative Findings

Key themes emerging from interviews included:

- Knowledge and Understanding: Many participants had limited pre-existing knowledge of menstruation.
- Impact on Religious and Social Practices: Menstruation was associated with restrictions on religious participation and social activities.
- Psychological Distress: Many girls experienced anxiety and embarrassment due to societal taboos.
- Importance of Maternal Influence: Mothers were the primary source of menstrual knowledge, but often conveyed misinformation.

4. Discussion

A lack of knowledge regarding menstrual biology and hygiene is still prevalent among adolescent girls, frequently leading to the circulation of misunderstandings and poor hygiene habits. Many research efforts have shown that health education plays a crucial role in enhancing menstrual literacy.

Dasgupta and Sarkar (2018) noted that adolescent girls who were provided with menstrual health education demonstrated substantially greater knowledge and improved hygiene practices than those lacking that experience. In the same vein, Kamal et al. (2021) validated that organized awareness initiatives positively impact menstrual knowledge, reinforcing the case for embedding menstrual education within school curricula.

The significant improvements seen after the intervention in this study suggest that participants developed a better understanding of sanitary product usage, proper disposal techniques, and important hygiene practices. These results align with the research by Balamurugan and Shilpa (2014), which showed that focused health education significantly enhances menstrual hygiene awareness and management in girls of school age. Similar findings from nations such as India, Nepal, and Bangladesh further highlight the significance of menstrual education in minimizing infection risks and promoting improved self-care habits, underscoring its relevance in adolescent health initiatives.

Furthermore, research by UNICEF (2018) and Kumar et al. (2020) indicates that targeted educational programs can significantly contribute to breaking menstrual taboos and fostering affirmative attitudes in young girls. In addition to promoting physical cleanliness, these initiatives enhance emotional strength and foster social involvement. Chandra-Mouli and Patel (2017) support this viewpoint, indicating that peer discussions and educational programs boost self-esteem and reduce the mental stress related to menstruation.

5. Strengths and Limitations

The robustness of this research is rooted in its organized educational strategy, which successfully enhanced awareness and practices regarding menstrual health. Nonetheless, certain constraints need to be recognized. The research was performed on a somewhat limited sample size (n=60), which could restrict its applicability. Moreover, self-reported information could have resulted in response bias stemming from social desirability. Future studies should explore longitudinal designs with bigger, more varied samples to enhance the validation of menstrual health initiatives.

6. Recommendations

1. Implementation of SHEP in Schools**:** Nationwide inclusion in school curricula.
2. Parental Awareness Programs**:** Educating parents to provide accurate menstrual information.
3. Access to Menstrual Hygiene Products**:** Ensuring availability in schools.
4. Longitudinal Studies**:** To assess long-term behavioral changes post-intervention.

7. Conclusion

This research shows that a Structured Health Education Program (SHEP) significantly enhances menstrual knowledge, hygiene practices, and lessens sociocultural taboos in adolescent girls. The noteworthy advancements observed after the intervention indicate that incorporating menstrual health education into school programs can yield lasting advantages for the reproductive health of adolescents. Future studies must emphasize creating scalable frameworks for menstrual health initiatives and examining how digital solutions and community-driven projects can enhance menstrual awareness and hygiene practices. By addressing stigma and misconceptions, menstrual health education can empower young girls, improve their well-being, and promote gender equality in health and education.

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