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# Menstrual Hygiene Material Management: A Comparative Study of Knowledge and Practice among Different Age Groups of Women

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**Abstract**

*Menstrual hygiene material management (MHMM) is vital for the physical, mental and social health and well-being of women, yet knowledge and practice levels vary across different age groups. The objective of this study was to study explores age-related differences in knowledge and practices of MHMM among women aged reproductive age (15–45) in Thaha Municipality, Nepal. This study seeks to answer the following questions: Is there a statistically significant difference in the knowledge level of menstrual hygiene material management among different age groups? and is there a statistically significant difference in the practice level of menstrual hygiene material management among different age groups? To explore these questions, out of a total of 12 wards of Thaha Municipality, wards 3, 5 and 7 were selected through cluster sampling method. Due to resource, material and time constraints, all women found in households aged 15 to 49 years were purposively selected. For this, data were obtained from 82 women using closed-ended questionnaire instruments regarding knowledge and practice related to menstrual hygiene material management. Data were analyzed by frequency table, mean comparison, standard deviation and one-way ANOVA with comparative means using SPSS version 27. The data were analyzed using ANOVA in SPSS (version 27). The findings show very significant differences in age on the knowledge of menstrual hygiene material management ($p = 0.001$) but no significant difference was found in Practice of MHMM ($p = 0.280$) among different age groups, with the 26–35 age group demonstrating higher awareness and practical engagement. The results suggest a need for age-specific interventions to promote effective MHMM strategies and policies.*

***Key Words:*** *Menstrual Hygiene, Menstrual material, Knowledge, Practice, Reproductive age*

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## Introduction

Menstruation is a natural process. When girls are between the ages of 12 and 14, they begin to bleed from their vagina every 28 days, which is called menstruation (Dhakaal, 2021). Menstrual hygiene management refers to products used to manage bleeding during menstruation, such as sanitary cloths, menstrual pads, menstrual cups, tampons, etc. (UNICEF, 2019). Menstrual hygiene products are now easily available at every local level and in every region. The Government of Nepal is currently distributing sanitary pads free of charge to schools at every local level. Among the menstrual materials, there are also other devices besides sanitary pads that work to protect the environment and prevent environmental pollution. Menstrual hygiene is a part of menstrual hygiene management. Menstrual hygiene management is a critical aspect of women's health and well-being, yet it remains a topic shrouded in stigma and silence. In Nepal, like many other parts of the world, the cultural, social, and economic factors surrounding menstruation can significantly impact women's experiences and practices related to menstrual hygiene. Understanding the menstrual hygiene practices, knowledge, and challenges faced by individuals in Nepal is essential for the development of targeted interventions and policies to improve menstrual health outcomes. Nepal a country rich in cultural diversity and tradition grapples with various barriers to adequate menstrual hygiene management. Factors such as limited access to affordable menstrual products, lack of proper sanitation facilities, and inadequate education and awareness about menstrual health effectively. Despite efforts to address menstrual hygiene issues in Nepal, significant gaps persist in both access to resources and knowledge about menstrual health. Many women and girls continue to restore to unhygienic practices due to a lack of options or misinformation, putting their health at risk and perpetuating cycles of shame and secrecy surrounding menstruation. This survey aims to shed light on the current landscape of menstrual hygiene practices, knowledge, and challenges among individuals in Nepal. By collecting valuable insights directly from the community, we seek to identify areas for improvement and inform evidence-based interventions that promote menstrual health and dignity for all. Through this research, we endeavor to contribute to the ongoing efforts to break the silence, dispel myths, and empower individuals to manage their menstrual health with confidence and dignity. As a result, many women and girls lack the knowledge and support necessary to manage their menstrual health safely and hygienically. Currently, materials used during menstruation are provided, sold, and distributed by various organizations,

including various non-profit and for-profit organizations. The number of large and small industries engaged in the production, sale and distribution of mineral materials is increasing day by day. However, Access to menstrual hygiene products remains and significant ruler and marginalized communities. High poverty rates, limited infrastructure, and cultural barriers bate the difficulties in accessing affordable and reliable menstrual products. Additionally, inadequate sanitation facilities, including a lack of clean and private toilets, pose additional challenges for women and girls during menstruation. Education and awareness about menstrual health are also lacking in many parts of Nepal. Schools often provide no information about menstruation, leaving girls prepared and vulnerable to misinformation. Furthermore, misconceptions about menstruation contribute to discriminatory practices and exclusionary behaviors, particularly in educational settings.

Every woman between the age groups of 15 to 49 experiences menstruation for 4 to 5 days every 28 days. The WHO has defined this age group as reproductive age. Statistics show that 1.8 billion people in the world menstruate every month (UNICEF, 2019). During the bleeding phase of the menstrual cycle, when the egg is not fertilized, the amount of estrogen and progesterone in the inner layer of the uterus decreases. This causes the inner layer of the uterus to be destroyed, causing the blood vessels there to rupture and abnormal blood to come out of the vagina. In this situation, girls and women feel uncomfortable doing their daily activities. To easily complete your daily tasks, you need various menstrual products, such as menstrual pads, menstrual cups, and tampons. Using these products will prevent bleeding during menstruation from leaking out. Currently, various materials have come into the market regarding menstruation materials. Not only sanitary pads, but also various other disposable materials and environmentally friendly materials have come into the market, but such materials are expensive to buy and due to the geographical nature of Nepal, they are not accessible everywhere. Statistics show that 60% of teenage girls in Nepal still miss school due to lack of hygiene products during menstruation (UNICEF, 2020)Statistics show that schools in many rural and underserved areas of Nepal still lack clean toilets and water facilities suitable for use during menstruation (WaterAid Nepal, 2018)Despite the production of various products aimed at making the materials used during menstruation environmentally friendly in the interest of sustainable development, statistics show that about 70% of teenage girls in rural Nepal still use cloth (Save the Children, 2016). According to data published by World Vision Nepal in 2022, 26.7% of school-aged girls are still unable to attend school due to menstruation (World Vision International Nepal, 2022). In 2019, President Bidya Devi Bhandari set a goal of distributing free sanitary pads to 1.4 million school

students. Although 75.8% of women aged 15 to 24 use disposable sanitary pads, only 41.6% of those over 35 use disposable sanitary pads (Bhandari et al., 2024). Still, access to menstrual hygiene products, knowledge, and practice necessary to maintain menstrual hygiene among women of reproductive age between 15 and 49 years in Nepal remain poor. Despite the policies and regulations regarding menstrual hygiene and material management, and the programs implemented by various organizations, UNICEF (2020) data shows that women in Nepal are still forced to face various problems due to socio-cultural values, lack of proper knowledge, and lack of access to materials. The data shows that the highest inequality among women of different age groups regarding menstrual hygiene was observed in Madhes Province, followed by Bagmati Province. The data also shows that there are significant differences in knowledge and practice of menstrual hygiene among women of different age groups, based on their socioeconomic status and education level. In Bagmati Province, only 48% of women in the age group of 15-49 years practice menstrual hygiene (Hasan et al., 2025). Thaha Municipality is also at a local level within Basmati Province that has represented this problem.

Since the level of knowledge and practice related to menstrual hygiene materials management varies by age, this study was focus on that objective to assess the impact of age on knowledge and practice related to menstrual hygiene management. The results of this study on age-related differences in knowledge and practice regarding menstrual hygiene materials will help to formulate policies to reduce menstrual hygiene problems among women and adolescents and to formulate age-specific plans to solve these problems. Also, since this study was conducted on women and adolescents in Thaha Municipality at the local level. Thaha Municipality is the second municipality in Makwanpur District, located in central Nepal. Located about 59 km from Kathmandu, this municipality is a hill municipality under Bagmati Province. It was established by merging the former Daman, Palung and Bajrabarahi VDCs. This municipality, which has a total of 12 wards, is inhabited by people with different ethnic and regional cultural identities, resulting in a diversity of knowledge and practices related to menstrual management among women and adolescents. The results obtained from this research will help to generalize to other local levels and also plan a new program related to menstrual material hygiene for women in Thaha Municipality.

## Review of Literature

This research paper conducted a literature review to find out the effect of age or age-related differences in menstrual hygiene material management. Studied the literature on "Knowledge of menstrual hygiene management among adolescent girls: what does

evidence show" which showed that there is a lack of knowledge regarding menstrual hygiene management among girls. This study examined the levels of knowledge about menstrual hygiene management among girls aged 10 to 19 years, but did not include the levels of knowledge among women aged 19 and older (Shrestha et al., 2020).

Although school-age girls have knowledge about menstrual hygiene material management, they lack adequate management skills. Among the tools used for menstrual hygiene material management, only sanitary pads are known, apart from them there are other tools, about which lack of access and ignorance is also seen among school-age girls. 61. 1% of adolescents are still unable to attend school due to menstrual problems. Only 71.7% use disposable sanitary pads, but 69.8% are unable to change pads in college (Ghimire, 2023).

A mixed-methods study on the role of sex education in influencing knowledge, experience, and perceptions of menstrual hygiene conducted between a private and a public school in Lalitpur Metropolitan City, which collected data from 400 girls aged 11 to 21, According to this study, although knowledge and education have changed the perception of menstruation as a taboo, it was concluded that in practice, reducing it should start with family members or parents. This study also indicates that age plays an important role in changing perceptions and practices regarding menstrual management, which shows that there is still a need to identify gaps between knowledge and practice regarding menstrual management (Karki, 2023)

In ancient times, cloth was the most commonly used menstrual materials, but in the current commercial environment, commercial menstrual materials such as cups, tampons and sanitary pads have emerged, but not all women have sufficient information and access to them. Acceptability and feasibility of vaginal menstrual cup use among schoolgirls in rural Nepal: A qualitative pilot study conducted among adolescents aged 13 to 19 years. This study showed that although adolescents were familiar with using cups, they lacked knowledge on how to wash and use them (Pokhrel et al., 2021).

A study titled about Drivers of hygienic menstrual practices among reproductive-age women: evidence from Nepal demographic health survey was conducted to study the factors that influence menstrual hygiene. This study showed that only 48% of women aged 15 to 49 years used healthy menstrual hygiene practices such as using sanitary pads and menstrual cups. Age, education, marital status, economic status, social restrictions, etc. have been shown to influence menstrual hygiene practice (Hasan et

al., 2025). However, this study did not clarify the level of menstrual hygiene material management knowledge and practical practice among women aged 15 to 49 years.

A literature review of current approaches to improving menstrual hygiene management in emergency contexts conducted in 2017, based on various grey literature reviews, found that although most women received natural hygiene materials, they did not know how to manage them, leading to a lack of awareness of hygiene practices. In low-income countries, the use of menstrual cups was low. Due to financial constraints, even though there was knowledge of cups, there was a lack of knowledge about how to manage them. According to this study, in low-income countries, when informational education and awareness were promoted in a situation where there was no knowledge about the natural cup, then the cup was reintroduced and the data was compared between those who knew how to manage the cup and those who did not know how to manage the cup, and they were able to manage the menstrual cup (VanLeeuwen, 2018)

All the studies and research conducted so far on menstrual hygiene material management have focused on the types and quantities of materials used in menstrual hygiene materials. Some have focused on adolescent girls, while others have focused only on women. The problems seen related to menstrual hygiene material management were also studied and presented. However, there is scanty of research to determine whether age affects menstrual hygiene material management according to each age group. Since there is no study or research from the perspective of the level of knowledge and practice of rural Nepalese communities regarding this in terms of different age groups, this paper has highlighted the age differences in menstrual hygiene material management. The results obtained from this study will help the government, various organizations, and local levels to formulate programs for different ages and to build knowledge and behavioral plans related to menstrual hygiene and material management.

**Conceptual Framework**

**Figure: 1**

The presented conceptual framework shows the relationships between the main variables used in the study. This study shows how age, as an independent variable, affects the practice of MHMM. This framework brings clarity to the main research objectives and questions and lays the foundation for hypothesis formulation.

There are significant differences in knowledge regarding MHMM among women of different age groups. There are significant differences in MHMM practice levels among women of different age groups by age.

## Methodology

This research paper uses data from a field research report conducted to complete the partial course of the 599th paper of the MA Sociology programs of Tribhuvan University. This study seeks to answer the following questions: Is there a statistically significant difference in the knowledge level of menstrual hygiene material management among different age groups? and Is there a statistically significant difference in the practice level of menstrual hygiene material management among different age groups? To explore these questions, out of a total of 12 wards of Thaha Municipality, wards 3, 5 and 7 were randomly selected through cluster sampling method. Due to resource, material and time constraints, all women found in households aged 15 to 49 years were purposively selected. For this, data were obtained from 82 women using closed-ended questionnaire instruments regarding knowledge and practice related to menstrual hygiene material management. Data were analyzed by frequency table, mean comparison, standard deviation and one-way ANOVA with comparative means using SPSS version 27.

## Data Analysis and Result

The data obtained from the field survey has been presented in three categories: social demographic data, knowledge-related data, and practice-related data:

### Social demographic description

This paper only includes age under social demographic data. This research paper presents age as an independent variable whose effect is seen on the dependent variable.

### Age

This research selected women of reproductive age between the ages of 15 to 45 as respondents. They were divided into three groups: 15 to 25, 26 to 35, and 36 to 45. The number of women by age is presented in the table below:

**Table: 1**
Age of the respondents

| Age Group | N | Percentage |
|---|---|---|
| 15-25 | 17 | 20.7% |
| 26-35 | 33 | 40.2% |
| 36-45 | 32 | 39.0% |
| Total | 82 | 100% |

Source: Field Research 2080

According to Table 1, the largest age group of respondents selected for this study was between 26 and 35, which was 33 (40.2%), while the smallest age group was 17 (20. %) in the 15 to 25 age group. According to this data, married housewives were found to be more likely to be respondents than school-age girls.

**Age and Knowledge on Menstrual Hygiene Material Management**

Here, the data of the knowledge mean score for each age group is presented, comparing the mean knowledge level to identify age-related differences in knowledge level related to menstrual hygiene material management. Total six variables were included to identify the level of knowledge regarding MHMM among women of reproductive age. Information was collected on six variables: knowledge about sanitary pads, information about commercial sanitary pads, use of tampons, and use of cups. All of these variables were included in the transformed variable to derive a sum score for knowledge. The answers obtained from which are presented below:

**Table: 2**
Knowledge on Menstrual Hygiene Material Management

| Age Groups | Mean | N | Std. Deviation |
|---|---|---|---|
| 15-25 | 10.2941 | 17 | 1.04670 |
| 26-35 | 11.3030 | 33 | .72822 |
| 36-45 | 11.0000 | 32 | .87988 |
| Total | 10.9756 | 82 | .92930 |

Source: Field Research 2080

Table 2 presents the level of knowledge regarding menstrual hygiene material management. Looking at the average level of knowledge, the highest average score was 11.30 with SD value was .73 for those aged 26 to 35, while the lowest average knowledge level was 10.29 with SD value was 1.05 for those aged 15 to 25. Similarly, the average score for the 36 to 45 age group was 11 with S.D. value was .879.

The above data showed that the knowledge level of the 26 to 35 age group was higher than that of the other two groups. The data presented showed that the knowledge scores were higher in the middle age group. Thus, it was found that the level of knowledge increased with age, while the level of knowledge decreased at a younger age.

**Differences in MHMM Knowledge level by age**

Here, the effect of age on the knowledge of menstrual hygiene material management or the difference between age and knowledge of menstrual hygiene material management has been verified using ANOVA, which is illustrated in the table below:

**Table: 3**

Total Knowledge score

| | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 11.452 | 2 | 5.726 | 7.733 | <.001 |
| Within Groups | 58.499 | 79 | .740 | | |
| Total | 69.951 | 81 | | | |

Source: Field Research 2080

The table 3 shows that the sum squares between different groups was 11.452, while the degree of freedom (df) was 2 and the mean square is 5.726. Similarly, sum squares within group members were 58.499 and the degree of freedom was 79, and the mean square was 0.740. The above table shows that the result of ANOVA analysis conducted to test the difference between two or more groups were significant ($F = 7.733$, $p = 0.001$) which the mean value of the three groups was different from each other or significant difference in the mean from the others. The result is considered statistically significant since the P-value ($0.001$) $< 0.05$.

**Age and Menstrual Hygiene Material Management practice**

Here, we present the level of practice related to menstrual hygiene material management among women in the reproductive health sector of Thaha Municipality**.** The data presented practice levels by age group to identify age-related differences in mental health material management practices. For this, the data has been studied on eight variables frequency of changing, materials used, manages materials, Clean hands, Clean internal organs, dry clothes, Problems faced, Hand wash and presented as follows:

**Table: 4**

Age and Menstrual Hygiene Material Management practice

| Age Groups | Mean | N | Std. Deviation |
|---|---|---|---|
| 15-25 | 14.5294 | 17 | 1.97223 |
| 26-35 | 15.2727 | 33 | 1.97283 |
| 36-45 | 15.5625 | 32 | 2.39539 |
| Total | 15.2317 | 82 | 2.15624 |

Source: Field Research 2080

The table 5 shows that, women participating in the menstrual hygiene management practice are categorized into three different age groups: 15–25 years, 26–35 years, and 36–45 years. In total of 82 participants, when comparing the level of menstrual hygiene material management practice by age, average score for the 15-to-25-year age group was found to be the lowest at 14.53, the average for the 26-to-35-year age group was slightly higher at 15.276, and the average score for the 36-to-45-year age group was the highest at 15.56. The standard deviation between the three age groups ranged from 1.97 to 2.40. The SD values of the three score groups were different, but the differences were only small.

Based on these data, it can be said that women in the 36 to 45 age group appear to have higher levels of involvement and practice in menstrual hygiene management. The data shows that menstrual hygiene material management practice levels increase with age, while the data also showed that practice levels decrease at younger ages. This may be because this age group is more likely to be employed and educated. Further analysis is needed to determine the reasons for the lower levels of practice in other age groups.

**Differences in MHMM practice level by age**

Above, the difference in menstrual hygiene material management practice according to age group was presented through mean comparison, but to verify whether the difference seen from it is significant, it was verified using ANOVA., in this study, the effect of age on 8 variables, namely frequency of change, materials used, manage materials, clean hands, clean internal organs, dry clothes, problems faced, hand wash, has been examined using ANOVA, which is presented in the table below:

**Table 5**

Total score of practice level

| | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Group | 11.942 | 2 | 5.971 | 1.294 | .280 |
| Within Groups | 364.656 | 79 | 4.616 | | |
| **Total** | **376.000** | **81** | | | |

Source: Field Research 2080

In this research, one-way analysis of variance (ANOVA) was used to test the differences between different groups. The results of ANOVA show that the total score of between groups and within groups was 376.In the total score between groups had a score of 11.942, while within groups had a score of 364.656, While the obtained F-value was 1.294, the p-value was .280, which was above the significance level of 0.05. The data shows that the differences between the different age groups are not statistically significant among menstrual hygiene material management practice.

The following variables related to menstrual health were included in the presented data frequency of changing, materials used, manage materials, clean hands, Clean internal organs, dry clothes, Problems faced and Hand wash. The presented data shows that there is no difference in these variables according to age. Thaha Municipality is a local level located close to Kathmandu, which makes it easy to access various resources, which may not have led to age differences in the level of practice there.

## Findings and Discussion

In this study, a survey conducted on 82 women reproductive aged 15 to 45 years in Thaha Municipality revealed significant differences in knowledge and behavior regarding Menstrual Hygiene Material Management by age.

**Age Groups:** the largest age group of respondents selected for this study was between 26 and 35, which was 33 (40.2%), while the smallest age group was 17 (20. %) in the 15 to 25 age group. War data shows that the number of working-age women working is higher, while the number of school- and college-age youth is lower.

**Knowledge on Menstrual Hygiene Material Management:** The highest average score of knowledge was 11.30 with SD value was .73 for those aged 26 to 35, while the lowest average knowledge level was 10.29 with SD value was 1.05 for those aged 15 to 25. Similarly, the average score for the 36 to 45 age group was 11 with S.D. value was .88.

**Differences in knowledge level by age**: The sum squares between different groups were 11.452, while the degree of freedom (df) were 2 and mean square were 5.726. Similarly, sum squares within group members were 58.49 and the degree of freedom were 79, the mean square was 0.740. ANOVA analysis conducted to test the difference between two or more groups were significant between ($F = 7.733$, $p = 0.001$).

**Age and Menstrual Hygiene Material Management practice:** The average score for the 15-to-25-year age group was found to be the lowest at 14.53, the average for the 26-to-35-year age group was slightly higher at 15.276, and the average score for the 36-to-45-year age group was the highest at 15.56. The standard deviation between the three age groups ranged from 1.97 to 2.40. The SD values of the three score groups were different, but the differences were only small.

**Differences in Practice level by age:** The results of ANOVA show that the total score of between groups and within groups was 376.In the total score between groups had a score of 11.942, while within groups had a score of 364.656, While the obtained F-value was 1.294, the p-value was .280, which was above the significance level of 0.05. The data shows that the differences between the different age groups are not statistically significant among menstrual hygiene material management practice.

The main objective of this study was to compare the knowledge and practice levels between each age group. Age was categorized into three groups. This study found significant differences in the level of knowledge regarding menstrual hygiene material management, but no differences in the level of practice based on age. When looking for differences in knowledge levels, women aged 26 to 35 years had higher levels of knowledge about MHMM. A possible reason for this may be that women's level of knowledge has increased with age through their experience and experiences. Similarly, the level of knowledge among girls aged 15 to 25 was comparatively low. This may be due to reasons such as lack of information related to sexual and reproductive health at the school level, social shyness, etc. This study found no age-related differences in MHMM practice levels, but comparatively, practice levels in the 36- to 45-year-old age group were slightly higher than in other age groups. The possible reasons for this may be the easy availability of resources due to the study area being close to Kathmandu and the impact of reproductive health programs conducted by various organizations there.

Like previous published research, Shrestha et al. (2020), research also showed a lack of knowledge level of menstrual hygiene material management among adolescents.

Similarly, Hasan et al. (2025), showed that socio-economic and cultural factors affect MHMM practice. However, those studies did not cover all age groups of reproductive age. However, this study covers all age groups and presents the differences between the knowledge and practice levels of MHMM across all age groups.

This study used ANOVA to show that the p-value (P = 0.001) showed a significant difference in knowledge by age, while the p-value obtained in practice (p = 0.280) rejected the age group difference in practice. The data obtained showed that despite differences in knowledge, there was no difference in practice. This shows that the impact of knowledge on practical aspects is not significant, but it can be assumed that the impact of service facilities and access may be greater than that of knowledge on practical aspects in that area.

## Conclusion

This research aims to further strengthen policy making and behavior modification programs by deeply analyzing the behavioral differences seen in society. The results of this study show that there are significant differences in menstrual hygiene management by age group. Women aged 26–35 years have relatively high knowledge and behavior regarding MHMM, which may be due to their education, access to information, and social activation.

Adolescent and older women, on the other hand, are still limited to traditional practices and need targeted public awareness, accessible services, and practical education. This suggests that age-specific health education programs need to be developed to improve menstrual information, behavior, and material management.

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