

# Mixed method approach for determining use, effectiveness, and technical soundness of the sanitary pad incinerators in the schools of Nepalgunj submetropolitan city

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## ABSTRACT

**Background:** Menstrual hygiene management is a challenging agenda in developing nations like Nepal. Incinerators have been installed in schools for managing the menstrual hygiene. **Objective:** This study was conducted to determine the use, effectiveness, and technical soundness of the sanitary pad incinerators installed in various schools of Nepalgunj submetropolitan city of Nepal. **Materials and Methods:** A mixed-method approach combining quantitative and qualitative methods was conducted in Nepalgunj, Nepal. Entire incinerator attached school (17 schools) of Nepalgunj was technically assessed and schools' principals were interviewed for obtaining quantitative information while six focus group discussion among the school girls and female teachers; 6 in-depth interviews with incinerator's caretaker for the qualitative information. Quantitative data were analyzed using the SPSS version 20.0, and inductive thematic analysis was adopted to analyze the qualitative data. **Results:** Of total, 13 schools were Government schools, 3 Government supported Madrasas, and 1 private Madrasa school. All (17) schools followed the District Education Office (DEO) guidelines while installing the incinerator. However, none of the school's incinerator met the standard guideline of the DEO both in terms of components and their measurement. The qualitative finding shows that participants have appreciated the incinerator provision for disposing their soaked sanitary products during the menstruation at school. **Conclusions:** Incinerators should be promoted together with washing facilities inside girls' toilet for effective disposal of sanitary products at school. This study's finding suggests to install technically sound and user-friendly incinerators in schools for managing the menstrual hygiene.


**KEY WORDS:** Incinerator; Menstrual Hygiene Management; Sanitary Pad Provision

## INTRODUCTION

Menstruation is the natural process of girl's transition to womanhood through periodic discharge of blood and mucosal tissue from the uterus. Good menstrual hygiene plays a

significant role in the girls' and women's health, education and dignity while its misconceptions worsen the health and contribute to female morbidity.<sup>[1-4]</sup>

Women and girl use pieces of cloth and sanitary pads as absorbent during menstruation; however, safe disposal of it is the big challenge. Girl-unfriendly school environments hinder the attendance and class participation.<sup>[5,6]</sup> School absenteeism is highly prevailed in lower socioeconomic nations due to the poor Menstrual hygiene management (MHM) at school.<sup>[7-10]</sup> Similarly, studies from Nepal have shown that majorities of adolescent girls have missed school during menstruation due to the poor privacy for cleaning, washing, and disposing sanitary pads at school.<sup>[11,12]</sup>

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In Nepal, various governmental and nongovernmental organizations are working on MHM to ensure privacy for cleaning, washing and disposing sanitary products in schools. As an intervention, incinerators have been installed by attaching with outer wall of girls' toilet to manage the menstrual waste in schools. Installation of incinerators alone is not sufficient to manage the menstrual hygiene in school; however, it should be technically sound and should be appreciated by students and female teachers to ensure its effectiveness in managing menstrual waste at school. There have been several studies on assessing MHM in developing nations. However, we could not find any study up to our knowledge on assessing technical standard of incinerators and user satisfaction toward the installed incinerators.

Thus, this study aims to explore the use, effectiveness, and technical soundness of incinerators for managing menstrual hygiene in schools of Nepalgunj submetropolitan city.

## MATERIALS AND METHODS

This study was conducted in Nepalgunj submetropolitan city of Banke district, a city located in the Mid-Western region of Nepal from December 2016 to February 2017. This study adopted mixed-method approach combining quantitative and qualitative methods. Simple random sampling was adopted to select schools and participants for focus group discussion (FGD) and in-depth interview (IDI). A total of 6 FGDs and 6 IDIs were conducted to obtain the qualitative data. IDIs were conducted among incinerator caretakers while FGDs were conducted among school girls (who have had their menarche) and the female teachers. Girls aged 13-18 years who had started menstruation and female teachers of incinerator attached school of Nepalgunj submetropolitan city were the inclusion criteria of the study. There were altogether 17 incinerators installed schools in Nepalgunj submetropolitan city. The quantitative study was conducted among all (17) school's principals, and technical assessment of those schools' incinerators was performed.

Trained interviewer conducted the face-to-face interview and FGD at school of the study participants. Eligible participants were explained about the purpose of the study, and a written consent was obtained before conducting interview and group discussion. For those students who were under the age of consent, written assent was obtained and a copy of assent was given to them. Qualitative data collection took place in a quietest room or hall of school that gave the optimum privacy. The FGDs and IDIs were audio recorded using a digital voice recorder. Audio records were transcribed in Nepali language and then translated into English. Approval for this study protocol was obtained from the Ethical Review Board of Nepal Health Research Council.

Quantitative data were analyzed using the SPSS version 20 while inductive thematic analysis was performed for

qualitative data analysis. For qualitative data, the translated text was imported into the Atlas.ti 5.0 to code the texts. Coding was done by a coder (co-investigator) and theme emerged was discussed.

## RESULTS

Of total, 13 schools were Government schools, 3 Government supported Madrasas, and 1 private Madrasa school. All (17) schools followed the District Education Office (DEO) guidelines while installing the incinerator. However, none of the school's incinerator met the standard guidelines of the DEO both in terms of components and their measurement. Components such as cover of pad disposal hole, metal door to the hole to take out the burnt ashes, chimney to outlet the fume, and chimney cap were lacking in almost all schools' incinerators (Table 1).

In addition, the qualitative study indicated the theme that the girl students' and female teachers appreciated the incinerators for safe disposal of sanitary products (Table 2). It has been found that the incinerator is user-friendly and is convenient to use. Students', teachers' and incinerator caretakers also reported that components such as lid of pad disposal hole in toilet, metal door (metal shutter) to take out the burnt ashes, chimney to outlet the fume, and chimney cap were most common incinerators' technical components that were lacking. Respondents recommended that the incinerator should be built larger with chimney and its cap and lid at pad disposing hole to enhance the level of users' satisfaction (Table 2).

### Quotes Supporting the Emerged Theme

*"We lock the door from inside the toilet and then we change the pad. Besides, there is the water facility in the toilet."*

**Table 1:** Availability of incinerator's component as per DEO guideline

Incinerator's components	School's with incinerator's components as per DEO	
	Yes (%)	No (%)
Top cover/slab of incinerator	17 (100)	0
Pad disposal hole in toilet	17 (100)	0
Cover on opening of pad disposal hole in toilet wall	0	17 (100)
Metal mess inside incinerator to collect and burn pad	17 (100)	0
Hole to take out burnt ashes	17 (100)	0
Metal door to the hole to take out burnt ashes	0	17 (100)
Chimney to outlet the fume	3 (18)	14 (82)
Cap on chimney	2 (12)	15 (88)

DEO: District Education Office

*Then we dispose the pad from there and we come out.” (FGD, 1)*

*“We used to be scared that boys might see us while changing the pad inside toilet. Nowadays, there is the door lock from inside and incinerator to dispose pad. So we feel secure now.” (FGD, 5)*

*“Size of the hole is fine. It’s fine to throw pads to incinerator but sometimes they feel hateful to enter their hands in the hole to throw pads. This might be due to carelessness. Hole to throw pads is big and that’s fine.” (FGD, 4)*

*“Waste has been managed. In the past, students use to throw pad haphazardly but it is not prevailed now.” (FGD, 3)*

*“Previously we used to dispose pads in girls toilet so foul smell used to come. But after the installation of incinerator, we are feeling easy.” (FGD, 2)*

*“There is not any hamper in the study. Problem of school absenteeism has been solved. Students get pads in school if they menstruate at school. There is the pad disposing place from the toilet. There is the availability of soap and water. Therefore, students’ don’t feel difficult to come to school during their menstruation.” (FGD, 5)*

*“We used to ask leave to go home when we get menstruation at school. But now, there is the facility to change and dispose the sanitary pad at school. So we don’t go home nowadays, we keep continuing our study.” (FGD, 1)*

Table 3 provides the suggestions for improving and proper use of sanitary pad incinerator in line with management of menstrual hygiene practices in school.

**DISCUSSION**

Our findings show that all schools followed the DEO guidelines while installing the incinerator. However, none of

the school’s incinerator met the standard guideline of the DEO both in terms of components and their measurement. The qualitative finding shows that participants have appreciated the incinerator provision for disposing their soaked sanitary products during the menstruation at school.

The technical assessment of study found that none of the school’s incinerators was as per the standard guide lines in terms of components that they have followed during installation. Components like lid of pad disposal hole in toilet, metal door (metal shutter) to take out the burnt ashes, chimney to outlet the fume, and chimney cap were the most common incinerators’ components that were lacking. This might be due to the ignorance and neglect during installation and maintenance because menstrual issues are still the topics of silence and negligence for the developing countries like Nepal. Furthermore, various studies have revealed that MHM is an issue that has not received sufficient attention in developing the world.<sup>[1,2,8,13]</sup> Lack of lid in pad disposal holes (100%) has led to foul smell inside the toilets. Apart from this, the absence of metal door of incinerators (100%) has contributed to air pollution in the surrounding environment of the schools. Similarly, class has been hampered due to the incinerator’s fume while burning pads. This is due to the lack of chimney (82%) to outlet the fume. Moreover, lack of chimney in most of the incinerators and absence of chimney cap (88%) has contributed to pass rain water inside the incinerators during the rainy season. This has created obstacles in burning the pad thus contributing to foul smell in the rainy season.

The qualitative findings reported that the installation of incinerators in the schools has contributed students and teachers to manage their soaked sanitary products and maintain their hygiene at schools. The theme, “appreciation of incinerator for managing sanitary products during the menstruation at school” has been emerged from the qualitative findings of the study. FGD findings showed that almost all participants use the incinerators during their periods. Incinerator provision at schools has played significant role in managing menstrual hygiene at schools. Girl students and female teachers felt convenient to change and dispose pads into incinerators from the female toilets. Furthermore, there was the wash facility inside toilet and pad provision at school that encouraged female students and teachers to change pad at school.

However, FGDs revealed that there is the problem of foul smell and fumes inside the toilet. This is due to the lack of lid in the pad disposing holes. These findings are consistent with the quantitative findings. Besides, the FGD reported that incinerator’s fume goes inside the classroom and has disturbed their classes. This is due to the lack of chimney in the incinerators which has also been stated by the quantitative findings. Furthermore, students reported that they feel shy to go to incinerator attached toilet carrying pad in their hands.

**Table 2:** Sub-themes and codes supporting the emerged theme, “appreciation of incinerator for managing menstrual waste at school

Subtheme	Codes
Convenient to change and dispose pad	Pad disposing hole
	Enough space to change pad
	Appropriate height of pad disposing hole
	Appropriate size of pad disposing hole
Encouraged to use incinerator	Privacy
	Water provision
	Pad provision at school
	Information on incinerator

**Table 3:** Suggestions for improving the incinerators and proper use of incinerator

Suggestions	Supporting quotes
Lid should be made to cover the pad disposing hole inside the toilet	<p>“It would be better if the hole has the lid. Smell and fume could not come to the toilet if the hole inside the toilet has lid.” (FGD, 1)</p> <p>“Fume goes out from the chimney. If there was cover of the pad disposal hole inside the toilet then fume might not go to the toilet. Then, fume could pass only through the chimney.” (IDI, 1)</p>
Pad disposing hole should be slope	<p>“It would be better if we could place lock in that hole. Besides, pad disposing hole inside the toilet should be slope rather than straight. Pads fall easily in the incinerator in the slope. There should be one “forceps” to pick up the pads if pads fall inside the toilet while throwing in the incinerator hole.” (FGD, 4)</p>
Incinerator should be built larger	<p>“Burning hole from where we lit fire is small so it needs to be made wider.” (FGD, 5)</p> <p>“Incinerator needs to be built larger so that fume could go out easily.” (IDI, 2)</p> <p>“Old one should be replaced with the larger incinerator. Larger incinerator should be constructed.” (IDI, 3)</p>
Chimney should be built in the incinerator	<p>“There is the difficulty due to the fume. It would be better if there would have lid and chimney so that fume could go in the sky.” (FGD, 6)</p> <p>“It is being difficult while studying because fume goes to class. Chimney should be made.” (FGD, 3)</p> <p>“There should be chimney to outlet the fume.” (IDI, 4)</p> <p>“There should be pipe to outlet the fume.” (IDI, 6)</p>
Management of unused sanitary pad provision inside the incinerator attached toilet	<p>“There should be one side in the incinerator attached toilet to manage the unused pad inside the toilet. So that we could not have to take pad in our hands while going to toilet. Such incinerator attached toilet will be easier and it needs to be built.” (FGD, 5)</p>
Aware the small students who are near to the age of menarche	<p>“There are small students so they throw haphazardly inside the toilet. Therefore, those pads need to be cleaned.” (IDI, 2)</p> <p>“Students should be communicated to throw pad in the incinerator.” (IDI, 3)</p> <p>“New girls who just started menstruating do not know about the menstruation and incinerator so they throw pad in the toilet.” (FGD, 4)</p>

Similarly, IDI with the incinerator care takers also reported that the smell and fume go to the girl’s toilet due to the lack of lid in pad disposal holes. Besides, most of the IDI reported that the size of the incinerator was small to clean and burn the pads. Four out of six incinerator’s care takers reported that the rain water goes inside the incinerator and wets the pads. This has created them problem to burn the wet pads inside the incinerator. Furthermore, both FGD and IDI revealed that students who just started menarche do not know about the incinerator, so they dispose the pad inside the toilets. This finding highlights the need of information related to menstrual hygiene and direction for proper use of incinerator for disposing the sanitary products among the menarche age students.

FGD participants and IDI recommended that the incinerators should be built larger keeping consideration on lid of pad disposing hole, chimney and its cap and metal door to take out the burnt ashes. Besides, FGD participants suggested for maintaining the slope of pad disposing hole. FGD participants also advised to place unused sanitary pad in one of the corners of incinerator attached toilets so that they would not have to carry pad in their hands while going to toilet to change their pads. Finally, FGD and IDI recommended to aware the girls near to the age of menarche on menstruation and provision of the incinerator for disposal of sanitary products.

Like other studies, our study do have some strengths and limitations. Mixed method design is one of the big strengths of our study, where we adopted both qualitative and quantitative methods to conclude the results. In addition, this study is of its first kind that highlighted the importance of installing

incinerators for managing menstrual hygiene. Despite the strength, we have limitation too. The main limitation is that this study was conducted in single setting, thus results cannot be generalized to wider aspect.

## CONCLUSION

A positive effort has been made to address the MHM in the schools through the installation of incinerators for disposing the sanitary products. The study revealed that there were some technical errors in the incinerator. Students and teachers reported that the incinerator installation has made them comfortable in attending school during their periods. Furthermore, they stated that some lacking in incinerators has created difficulties during the use. The findings suggest that the installation of incinerators has contributed for safe disposal of sanitary products at school. However, some technical errors have been found in the incinerator that somehow hampers in its use. Incinerators, therefore, should be sound in all of its technical components to make it more convenient to use. Apart from this, schools should pay high attention while installing incinerators and in maintenance of incinerators. This study’s findings can be used as reference for all the schools to install the sound and user-friendly incinerator at their schools.

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