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Process Evaluation of School Menstrual Hygiene Management Program at Governmental Primary School in Libo-Kemkem District, South Gondar Zone, North West Ethiopia

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ABSTRACT

Background: Menstrual Hygiene Management (MHM) is now recognized as a definitive public health and development issue, with a substantial increase in financial and human capital committed toward this topic. The package of interventions includes social support, knowledge and skills development, services provision, and distribution of menstrual materials and supplies to schoolgirls. The Evaluative assessment result shows there is interest in evaluating the program implementer, stakeholders, and beneficiaries. Finally, the aim of this evaluation show relevant information, conclusions, recommendations, and program implementation status at the government primary schools.

Objective: To evaluate the school menstrual hygiene management intervention program in the government primary schools in Libo-kemkem district, South Gondar zone, Northwest Ethiopia by 2023.

Method: A single case study evaluation design using the qualitative and quantitative data was collected concurrently, analyzed separately, and integrated during interpretation. A total of 626 school girls were interviewed to measure acceptability, and 7 KII interviews were conducted. The quantitative data was entered in Epi-data version 4.6 and exported to SPSS version 27 for binary logistic regression analysis. The qualitative data was collected using a tape recorder, transcribed into Amharic, and then translated into the English language. The translated data was coded and analyzed thematically. The final evaluation of school MHM program affordability, availability, and acceptability was judged as poor (<60%), fair (60–80%), and good (≥8 0%).

Results: The performance of MHM facility and resource availability among primary schools was judged as good (96.5%), and the performance of its affordability was judged as fair 66.81 %. The performance of MHM program acceptability was also judged as fair 73.57%. However, the overall MHM program implementation status was judged as fair 78.96%. Having fathers who had a primary level of education [AOR, 95% CI: 2.09 (1.18, 3.70)], having mothers who had secondary education [AOR, 95% CI: 2.25 (1.31, 4.03)], having mothers who had college and above educational level [AOR, 95% CI: 3.00(1.50, 5.88)], having mothers who are merchants [AOR, 95% CI: 2.14(1.37, 3.41)], having family members who buy sanitary pads for school girls [AOR, 95% CI: 2.35(1.42, 3.88)] was identified as significant predictors of MHM program acceptability among school girls the district.

Conclusion: The overall school MHM program implementation status was judged fair. The performance of MHM program acceptability among school girls was low compared to expected (51.6%). Therefore, health promotion activities should be the focus area of interventions, especially for mothers and fathers who have a low level of education

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Abbreviations
AOR = Adjusted Odds Ratio
CI = Confidence Interval
COR = Crude Odds Ratio
AGYW= Adolescent Girls and Young Women
CSE= Comprehensive Sexuality Education
KII= Key Informant Interview
MHM= Menstrual Hygiene Management
SDG= Sustainable Development Goal
SPSS= Statistical Package for Social Science
WASH= Water, Hygiene, and Sanitation

Background

Menstruation, also known as a menstrual period, is the monthly release of blood from the uterus through the vagina of adolescence girls as well as non-pregnant and before menopausal women. Menstrual hygiene management is defined as "when women and adolescent girls use a clean material to absorb or collect menstrual blood, and this material can be changed in privacy as often as necessary for the duration of menstruation, including using soap and water for body washing as needed and having access to facilities to dispose of used menstrual management materials" [1].

Globally, over 52% of women (or 26% of all people) are of reproductive age, and the majority of them menstruate monthly. Menstruation is a natural aspect of the reproductive cycle that is connected to girls (often between the ages of 9 and early 50s), yet in most cultures around the world, it is still taboo and rarely discussed [2]. Of the total population, 51% of the population is female and 23% of women are of reproductive age [3]. Menstrual hygiene management is a package of interventions that include social support, knowledge and skills, facilities and services, menstrual materials, and supplies all of relevance to schoolgirls [4]. The intervention was reported to have a positive impact on the school's social environment by improving the interaction between girls and boys, and staff were supportive of the intervention, facilitating additional discussions within school management that were required for sustainability [5]. It is critical to be welcoming and encouraging to create an environment that supports MHM with educational resources, absorbent sanitary products, and functional Water supply, Hygiene and Sanitation (WASH) facilities. Raising menstruation and hygiene behavior awareness has grown in popularity among public health organizations, although this field of study has largely been ignored [6].

In low- and middle-income countries, schoolgirls lack guidance, facilities, and materials to manage their menstruation [7]. These issues are made worse by a lack of facilities for safe Menstrual Hygiene Management (MHM), Water Supply, Hygiene, And Sanitation (WASH), as well as the limited availability and accessibility of sanitary products at schools, in Ethiopia there is a program of menstrual hygiene management intervention in a school setup [2].

Most schools in the country lack basic menstrual hygiene management amenities such as menstruation materials, places to change menstrual materials, running water, and disposal facilities. This has an impact on girls' education. School absenteeism was prevalent, with 50.3% of 650 schoolgirls interviewed missing classes during their menstrual period. Every month girls 85% were absent for 1-3 days and girls 15% were absent for more than 4 days [1]. Researchers recommended conducting evaluation research to understand how programs and policies are delivered, adapted and scaled [8]. Therefore this evaluation will be conducted to strengthen the program.

Factors associated with the affordability of MHM products in urban adolescent girls had better and fair practices than in rural girls. Similarly, girls from small families had more good practices than girls from large families. Parental education, parental income, and age at first menstruation were also statistically significant [9]. Factors associated with the availability of MHM products and services, School-based cross-sectional study was employed among preparatory and high schools in Holeta Town from May 01 to 20, 2019 identified adolescents from urban residences, got information about menstruation from mothers and teachers, school toilets with inside lock, and having good overall knowledge about menstruation were significantly associated with adequate MHM practice [10]. Factors associated with the acceptability of the MHM program, the qualitative study conducted in Malawi some of the cultural beliefs and practices associated with girls during menstruation such as denying girls talking to males [11]. A process evaluation study conducted in Rwanda discovered that the multi-component MHM intervention was feasible to deliver and acceptable to students and schools. Some fidelity issues were identified in areas where school ownership was required, which could be addressed by a school-based MHM leadership group [6].

The results of the evaluation were to support program implementers in determining how the program would proceed and assessing progress made in helping stakeholders identify and negotiate their values and standards for classifying a program's performance as successful, adequate, or failed. In different setups and program areas, there is not enough process, outcome, and impact evaluation rather than surveys at the national levels and regional levels. So, I will be conducted process evaluation and support as a baseline to outcome and impact evaluations for the next.

Evaluation is a process that aids in the improvement of performance and the achievement of goals by enhancing current and future processes/outputs, outcomes, and impacts. It is primarily used to evaluate program performance. Evaluations in MHM seek to track the progress of MHM intervention, implementation, and facilities. The logic framework provided below aids in locating the MHM program's objectives (Figure 1) [12, 13].

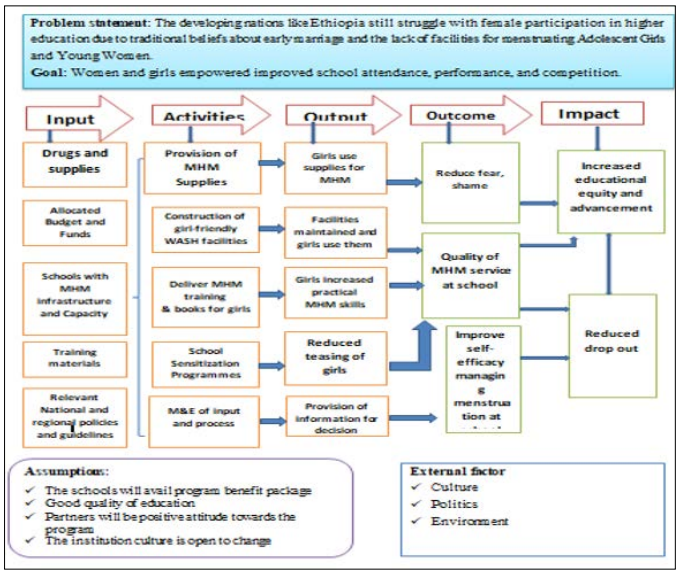

Figure 1: MHM Program Logic Framework

Note: The logic framework shows the impact of the interventions on school girls by addressing MHM needs.

Evaluation Methods

Evaluation Area and Period

Libo Kemekem is located from Ethiopia's capital city Addis Ababa is approximately 381 km, in the region of Amhara capital city Bahir Dar is approximately 67 km, in South Gondar Zone, is bordered on the south by the Reb which separates it from Fogera, on the west by Lake Tana, on the north by the Semien Gondar Zone, and on the east by Ebenat Woreda. The administrative center is Addis Zemen; other rural-urban include Ambo Meda and Yifag. Based on the Woreda communication office, the population profile

indicates a total population of 237,541, of whom 120,172 are men and 117,369 women, hence, 33 Kebeles which are 2 rural-urban Kebeles, 98 primaries, 3 secondary, and 3 preparatory schools and 9 health centers. A total of 237,541 households were counted in this Woreda, resulting in an average /conversion factor/ of 4.37 persons per household, and 55,242 housing units and most of the Woreda economy depends on agriculture.

The Evaluability assessment was done from January 01 to 25, 2023 as a pre-evaluation activity and the actual evaluation was conducted from April 5/2023 – April 28/2023.

Evaluation Approach

The implementation status was assessed using a formative evaluation approach based on the MHM's process theory. The availability, affordability, and acceptability dimensions from the access framework were used to evaluate MHM implementation.

Evaluation Design

A case study design with concurrent mixed methods evaluation was done. Both qualitative and quantitative data were collected concurrently, analyzed separately, and integrated during the interpretation phase. The qualitative data was used to complement the quantitative findings.

N.B: Its role in the program and evaluation, interest in the evaluation, and means of communication are described in Table 1.

Table 1: Program Description of Menstrual Hygiene Management

Stakeholder	Role in the program	Role in the evaluation	Interest in the evaluation	Communication strategy
Woreda education office • Head • Cluster supervisor	▪ Program implementer ▪ Report to the zonal education Dep't ▪ Guide how they are mobilizing logistics and other resources	▪ Develop evaluation question ▪ Create conducive environment ▪ Communicate stakeholders with regarding their interests	▪ Knowing actual program improvement ▪ Knowing the barriers that are obstacles to implementation improvement ▪ Lesson learning	▪ Formal letter ▪ Phone ▪ Meeting ▪ Face-to-face comn
Woreda health office and health post • WASH officer • Health extension workers	• Report to the zonal education Dep't • Implementer • Facilitator • Follow up • Health education and promotion	▪ To give clear information ▪ Negotiation with other stakeholders like NGOs	▪ Knowing the program implementation status at schools ▪ Lesson learning Experience sharing	▪ Formal letter ▪ Phone ▪ Face-to-face comn
School environment • School head • MHM club coordinator	▪ Implementer ▪ Facilitator	▪ Negotiator ▪ Give clear information	▪ Knowing the performance and its sustainability ▪ Knowing the level of awareness in the school environment	▪ Formal letter ▪ Phone ▪ Face-to-face comn
Beneficiaries Representative ▪ Family ▪ School female student representatives	▪ The user of the program	▪ Evaluation participants ▪ Give information	▪ Showing the gaps in the program ▪ Showing its needs from the program	▪ Face-to-face comn

Measurements of Variables

The affordability performance of MHM products was measured by using 7 indicators and we gave a weighted value of 30% was given, The availability performance of resources including inputs and supplies was measured by using 9 indicators and we gave a weighted value of 40% was given, and Acceptability of MHM program is measure using 19 indicators and has a weighted value of 30% was given respectively. Those students who scored above the mean of the total acceptability measuring score were considered as "good acceptable", otherwise "not good acceptable". The independent variables for the affordability of MHM materials availability of supplies and facilities and acceptability dimension were socio-demographic variables (age, residency, parental education, and parental occupational status), These indicators were developed from the national MHM implementation guideline and other related evaluations using nominal group technique participation of stakeholders. Weight was given for each of the selected indicators by the stakeholders before the evaluation was initiated. The indicator score is calculated using the formula

$$(\text{Indicator weight}| = \frac{\text{observed number X Indicator weight}}{\text{expected number}}).$$

The overall implementation of MHM was the outcome variable of the evaluation as measured by 35 indicators over the three dimensions: Affordability (7 indicators), availability (7 indicators), and acceptability (19 indicators). Finally, the implementation status of the program was judged as; poor, fair and good if the scores were < 60% Poor, 60 %¬¬ – 80 % Fair and ≥ 80% Good respectively.

Populations and Sampling

The evaluation included all government primary schools in the Libo-kemkem district. For the quantitative data the sample size was calculated by using a single population proportions formula for acceptability with 50% of the population with a 95% Confidence Level (CI), and a 5% margin of error (d), yielding a maximum sample size of 384 respondents after adding the 10% non-response rate, the sample size was 422, and by adding of design effect multiplying by 1.5, the total sample size was 633 and for resource availability, 16 schools were observed program facilities, supplies, randomly selected schools (30% of total schools in the study area, according to WHO recommendations for assessing health system operationally). For the qualitative study, 12 KII of MHM implementers, teachers, and students were conducted.

Sampling Procedure/Technique

First, select schools that are found in that Libo-kemkem District by simple random sampling, then select some sampling units from selected schools in each school by using a simple random with proportional allocation.

Data Collection Tool

To assess the acceptability of MHM, a structured administered questionnaire was developed based on a review of related literature. The key informant interview (KII) guide was also created to investigate the perspectives of KIs. To ensure consistency, the interview questionnaire and guide were created in English first, then translated into the local language (Amharic), and finally back to English. All interviews were conducted in Amharic. As data collectors and supervisors, four trained environmental health professionals and two female teachers were recruited from various schools. Two days of training on the overall objective of the evaluation and basic data collection procedures are provided prior to data collection. Then, in parallel, quantitative and qualitative data were collected. The quantitative data were gathered from program participants and teachers. Interviews with the district WASH focal person, school MHM coordinators, and Pathfinder International organization Libo Kemkem district officers will be conducted to collect qualitative data. To investigate the gaps and best practices of MHM program implementation, a key informant interview was conducted. A pretest was given to 20 students to identify misunderstood items, and any necessary corrections will be made based on the results of the pretest. A pre-test of the resource inventory checklists will be conducted at Tewdros II primary school (a non-selected school) to ensure that the checklists are fit for the program's resources. The data collector was supervised, and the principal evaluator checked and managed the completeness and consistency of the data on a daily basis. An experienced qualitative data collector (principal evaluator) is involved to ensure qualitative data quality, and finally, voice insertion is done in the findings to increase their credibility.

Data Management and Analysis

For analysis, quantitative data was entered into Epi-data and exported to the Statistical Package for Social Sciences (SPSS) version 27-software. Narrative statistics and tabular statistics were provided. Based on predetermined judgment parameters, the overall implementation of the program is analyzed and interpreted as a combination of the affordability, availability, and acceptability dimensions. To determine the factors associated with MHM acceptability, a binary logistic regression analysis was performed. During the bi-variable analysis, a variable with a p-value of less than 0.25 was included in the multivariable analysis. Finally, variables with p-values less than 0.05 and an Adjusted Odds Ratio (AOR) with a 95% CI were declared statistically significant. Qualitative data was recorded on tape, transcribed into Amharic, and translated into English. The translated data was coded and thematically analyzed.

Judgment Matrix Analysis

With the involvement of stakeholders, the judgment matrix was adapted from standards. The investigator's agreement on each indicator was used to calculate the weighted value for the affordability, availability, and acceptability dimensions. Based on the agreement of each dimension's weight, the affordability dimension had 30%, the availability dimension had 40%, and the acceptability dimension also had 30%. The overall implementation status of the school MHM program was judged as poor (60%), fair (60-80%), and good (80%) based on the judgment parameters for affordability, availability, and acceptability.

Results

Sociodemographic Characteristics

In this study, the age of school girls who participated lies between 11 and 19 with the mean age (± SE) being 14.86(± 0.06). The majority (66.1%) of the school girls were included in the age group of 14-16. Similarly, the majority (84%) of the school girls have resided in rural areas. More than half of school girls 60.4% had mothers whose educational status is secondary school and above (Table 2).

Table 2: Socio-Demographic Characteristics of School Girls in Primary Schools in Libo Kemekem District, April 2023

Variables	Frequency	Percentage (%)
Age group		
11-13	100	16.0
14-16	414	66.1
17-19	112	17.9
Place of Residence		
Rural	526	84.0
Urban/Semi-Urban	100	16.0
Occupational Status of Fathers		
Farmer	387	61.8
Merchant	164	26.2
Private employee	25	4.0
Government employee	50	8.0
Maternal Occupation		
Housewife	438	70.0
Merchant	123	19.6
private employee	25	4.0
government employee	40	6.4
Educational Status of Fathers		
has no formal education	115	18.4
Primary education	156	24.9
Secondary education	197	31.5
College diploma or above	158	25.2
Maternal Educational Status		
Has no formal education	143	22.8
Primary education	170	27.2
Secondary education	192	30.7
College diploma or above	121	19.3

Affordability of MHM Products and Supplies

This study revealed that the majority (95.7%) of school girls used sanitary pads to manage their menstruation in their schools. Nearly half (49.8%) of the school girls use sanitary pads donated by their respective schools. More than two-thirds (70.4%) of school girls had not got pocket money for sanitary pads from their parents. Similarly, more than two-thirds of school girls did not have reserved sanitary pads in their homes (Table 3).

Table 3: The Level of Affordability of MHM Materials for School Girls in Primary Schools in Libo Kemkem District, April 2023

Variables	Frequency	Percentage (%)
Type of Sanitary Pad Used		
Sanitary pad	599	95.7
Old clothes	11	1.8
New clothes	5	0.8
I don't use a pad	11	1.8
Who Buys Sanitary Pads?		
Respondent her self	99	15.6
Family	215	34.0
School donation	319	50.4
Pocket Money from Parents		
No	441	70.4
Yes	185	29.6
Presence of Reserve Pads at Home		
No	442	70.6
Yes	184	29.4
Alternative Pads When not having Sanitary Pads		
Uses old clothes by washing	435	69.5
uses new cloth	79	12.6
Borrows pad from other	93	14.9
I don't use any pad	19	3.0
Not have pads though they have the desire to use		
No	183	29.2
Yes	443	70.8
The Main Reason for not using Pads (N= 443)		
Pads are very costly	228	36.4
Feels embarrassed to buy	45	7.2
Shop, where pads are available, is at long distance	170	27.2
The Main Reason for not Desiring a Sanitary Pad (N=183)		
Pads cause unnecessary money spending	34	5.4
Feels relaxed to use cloth	135	21.6
Pads cause rashes or other problems	14	2.2
Changed Sanitary Pads Per Day		
I don't have changed	34	5.4
One time	320	51.1
Two times	207	33.1
Three times	50	8.0
More than three times	15	2.4

The overall affordability of the MHM program is 78.73% achieved from those school girls using sanitary pads 95.69%, similarly, school girls having alternative sanitary pads 96.96% of the respondents, on the other side school girls might not desire sanitary pads 0.01% (Table 4).

Table 4: Affordability Performance Indicators in the Implementation of the MHM Program in Libo Kemkem District, Northwest Ethiopia, 2023, n= 626

Affordability indicator	E	O	W	S	A	JPA
% of school girls who can afford the cost of sanitary pads from school	626	599	6	5.7	95.69	Good
% of school girls who receive pocket money from families	626	312	3	1.5	49.84	Poor
% of school girls who are the presence of reserve pads at home	626	184	4	1.2	29.39	Poor
% of school girls who have alternative sanitary pads	626	607	5	4.8	96.96	Good
% of school girls whose main reason for desiring sanitary pad	626	578	3	7.6	92.3	Good
% of school girls whose main reason for using pads	626	578	4	3.7	92.5	Good
% of school girls who are changed sanitary pads two and above per day	626	592	5	4.7	94.57	Good
Overall Affordability of the Program	626	493	30	23.6	78.73	Fair

E Expected, O Observed, W Weight, S Score= (Observed X weight)/Expected), A Achievement in percentage=(S/W) * 100), JPA Judgment Parameter

In the case of schools providing disposable pads to students, I discovered that not every adolescent girl in the schools received a pad. Some schools reported having a list of beneficiaries to whom they distributed the pads. Other schools provide disposable pads to help girls manage their first menstruation when it begins at school, but they must manage the remaining menstruation on their own.

Those who did not benefit from disposable pads in schools stated that they were scarcely available in stores and, if available, were sold at a high price. Because most of them cannot afford to buy them every month, they must rely on traditional pieces of old cloth to manage their menstruation. *"Disposable sanitary pads are very expensive and difficult to find in rural shops", (ambomeda school gender club 35 years old).*

Some girls claim that they use sanitary pads for the first two days of menstruation due to heavy bleeding and then use old cloth scraps for the remaining days to save money on pads.

"Pads are used when money is available, and cloths are used when money is not available", (School girl aged 16, Yifag).

A reusable pad was considered a better option by the participants in terms of affordability and disposal. They both require a one-time investment, with the reusable pad being able to be reused several times depending on the material.

"Disposable pads are so expensive, organizations are working to make reusable pads more accessible and affordable in their school girls produce MHM materials ie pants and locally reusable pads in the school facilitated by gender club, (29 years old teacher Yifag gender club coordinator)".

Availability of Resource

The overall MHM resources available in the primary schools in the district were 96.5 %Table 5.

Table 5: Availability Resources Performance Indicators in the Implementation of MHM Program in Libo Kemkem District, Northwest Ethiopia, 2023, n=9

Availability indicator	E	O	W	S	A	JPA
% of sex-separated toilets in schools	16	16	5	5	100	Good
%Separated MHM room in the school	16	14	5	4.4	87.5	Good
% of schools have a comfortable site of MHM room	16	14	4	3.5	87.5	Good
% of schools have waste bins in MHM room	16	2	5	0.6	12.5	Poor
% of MHM rooms have a lockable door	16	14	3	2.6	87.5	Good
% of schools have hand washing facilities in the MHM room	16	14	5	4.4	87.5	Good
% 0f school have sufficient water in MHM room	16	9	5	2.8	56.25	Poor
% of schools have soap in the MHM room	16	9	3	1.7	56.25	Poor
% schools availed sanitary pads	16	16	5	5	100	Good
Overall availability of the program	16	12	40	3	96.5	Good

E Expected, O Observed, W Weight, S Score= (Observed X weight)/Expected), A Achievement in percentage=(S/W) * 100), JP Judgment Parameter

All of the surveyed schools in the district had sex-separated toilets. Although the majority 87.5 % of schools had separated MHM rooms only 12.5% of the MHM rooms had the required waste bin to dispose of used MHM materials (Table 6).

Table 6: Resource Inventory of MHM Program Acceptability Among School Girls in Libo Kemkem District April 2023

Variables	Category	Frequency	Percent (%)
Schools have separated toilet	Yes	16	100
	No	0	0
The site of a toilet can be comfortable for privacy	Yes	14	87.5
	No	2	12.5
Waste bin in MHM room to dispose of used MHM materials	Yes	2	12.5
	No	14	87.5
Separated MHM room in the school	Yes	14	87.5
	No	2	12.5
MHM room has a lockable door	Yes	14	87.5
	No	2	12.5
Hand washing facility in MHM room	Yes	14	87.5
	No	2	12.5
Sufficient water in the MHM room	Yes	9	56.3
	No	7	43.8
Soap is available in the MHM room	Yes	9	56.3
	No	7	43.8
The pad is available in the MHM room	Yes	16	100
	No	0	0
	Total		96.5

Participants at all levels expressed satisfaction with the introduction of menstrual product interventions (both disposable and reusable), particularly in schools, some service providers believed that before menstrual product interventions were implemented in schools, girls would drop out after staining their uniforms with blood and being mocked by boys. They value how these programs have reduced school absenteeism among girls who would otherwise miss school due to cultural practices and a lack of materials to use when menstruating, as explained by a service provider.

"There is a great change in menstrual hygiene management. There are no more signs of depression in the classes or girls' rooms". (KII, School staff,)

Some school girls are too shy to ask for pads from their teachers when they start menstruating at school and pretend to be sick so that they can be sent home.

"It is sometimes difficult to inform the teacher that we are menstruating, and we prefer to stay at home". (School girl aged 17, Addis Zemen).

This was confirmed by another school girl in Wusha Tiris who said: *"When I'm too shy to tell the teacher I need pads because I'm menstruating, I write a note and have a friend deliver it to the teacher", (School girl aged 15, Wusha tiris).*

Acceptability of MHM Program in School

Six hundred twenty-six school girls participated in this study with an overall response rate of 98.8 %, This study found that the overall performance of MHM acceptability among school girls in Libo Kemekem district was a mean value of 51.6% with 95% CI: 47.8, 55.4 (Figure 2).

Acceptability of MHM Program in School

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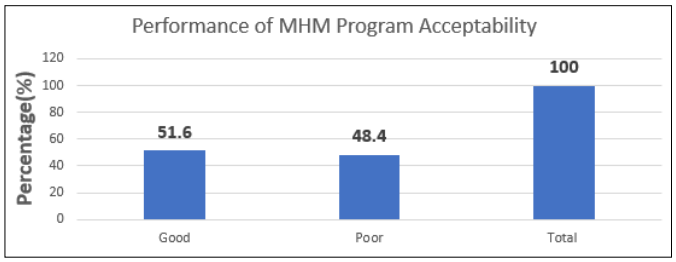

Figure 2: The Performance of MHM Program Acceptability among School Girls in Primary Schools in Libo Kemekem District, April 2023.

Factors Associated with MHM Program Acceptability among School Girls

The overall acceptability of MHM program implementation status among school girls is 73.57% which is school girls who think positively and ask someone to give them emergency sanitary pads without shying in school is 83.23 similarly in my study school girls who had friendly facilities MHM room 76.84%(table7).

Table 7: Acceptability Performance Indicators in the Implementation of the MHM Program in Libo Kemkem District, Northwest Ethiopia, 2023, n=19

Acceptability Indicator	E	O	W	S	A	JPA
% of school girls who agreed to change sanitary pads at least once a day	626	469	2	1.5	74.92	Fair
% of school girls who agreed on facilities are ideal places to change menstrual materials in school	626	383	1	0.61	61.18	Fair
% of school girls think positively and ask someone to give them emergency sanitary pads without shying in school	626	521	2	1.66	83.23	Good
% of school girls who had felled friendly facilities MHM room in the school	626	481	2	1.54	76.84	Fair
% of schoolgirl students should talk about menstrual issues to their teachers and male friends without shying	626	384	1	0.61	61.34	Fair
% of school girls who agreed that MHM facilities in the school compound is important to improve the result of female students	626	456	1	0.73	72.84	Fair
% of school girls think schools must have to prepare sex-separated toilets	626	477	2	1.52	76.2	Fair
% of school girl students think the school should provide sanitary pads	626	457	2	1.46	73	Fair
% of school girls agreed that all schools must prepare separate MHM rooms	626	465	2	1.49	74.28	Fair
% of school girls who feel the school environment should be comfortable managing menstruation	626	444	2	1.42	70.93	Fair
% of school girls who agreed that menstrual problems interfere with school performance	626	439	1	0.7	70.13	Fair
% of schoolgirl students felt distracted or had trouble concentrating in class during menstruation	626	450	1	0.72	71.88	Fair
% of schoolgirl students confident, might not be teased by men students because of menstruation at school	626	418	1	0.67	66.77	Fair
% of school girls should attend school during their menstrual period	626	457	1	0.73	73	Fair

% of school girls should participate in paid work during their menstrual period	626	436	1	0.7	69.65	Fair
% of school girls should participate in social activities during their menstrual period	626	471	2	1.5	75.24	Fair
% of school girls feel good which school shower is important	626	516	2	1.65	82.43	Good
% of school girls feel right about using the school bathroom during their menstruation period	626	503	2	1.61	80.35	Good
% of the school should invite an informed person to promote menstruation programs	626	523	2	1.67	83.55	Good
Overall acceptability of the program	**626**	**461**	**30**	**1.18**	**73.57**	**Fair**

Overall Acceptability of the MHM Program

The overall performance of the MHM program implementation status of schools in Libo Kemkem district is 78.96 which is judged as fair (Table 8).

Table 8: Overall Implementation Status of Primary School MHM Program in Libo Kemekem District, Northwest Ethiopia, 2023

Dimensions	E	O	W	S	A%	JPA
Affordability	3 0	26	3 0	25.5	78.73	Fair
Availability	40	3 0	40	3 0	96.5	Good
Acceptability	3 0	23	3 0	22.5	73.57	Fair
Overall implementation of the MHM program	100	78	100	78	82.93	Fair

E Expected, O Observed, W Weight, S Score, A achievement in percentage, JPA Judgment Parameter, F fair, G good, P poor.

In this study, variables with a p-value of less than 0.25 in the binary logistic regression were considered as cut-off points to select candidate variables for the final fitted multi-variable logistic regression analysis results. Therefore, in the binary logistic regression analysis, the age group of school girls, place of residence, religion of respondents, maternal occupation and educational status, occupational and educational status of fathers' of respondents, types of pads used, who buys the sanitary pad, presence of alternative pads when not having sanitary pads and frequency of changing sanitary pads per day were identified as a candidate variables for the multivariable logistic regression analysis. The multivariable logistic regression ruled out some of these variables and in the final fitted model, paternal educational status, maternal occupational and educational status, and buyers of sanitary pads for respondents were identified as significant predictors of the acceptability of MHM program among school girls in Libo Kemkem district.

To conclude the identified significant variables, school girls whose fathers had a primary level of education had almost 2 times higher odds of MHM program acceptability when compared to those school girls whose fathers had no formal education [AOR, 95% CI: 2.09 (1.18, 3.70)]. Similarly, the odds of MHM program acceptability among school girls whose mothers had a secondary education level was 2.25 higher [AOR, 95% CI: 2.25 (1.31, 4.03)] than those school girls whose mothers had primary education. Similarly, school girls whose mothers had college and above education had three times higher [AOR, 95% CI: 3.00(1.50, 5.88)] odds of MHM program acceptability than those school girls whose mothers had no formal education. Those school girls whose mothers are merchants had also 2.14 times increased odds of MHM acceptability compared to those school girls whose mothers are housewives [AOR, 95% CI: 2.14(1.37, 3.41)]. Finally, this study also reported those school girls whose family members buy their sanitary pads had 2.35 times higher odds of MHM program acceptability in schools compared to those school girls who buy their sanitary pads by themselves [AOR, 95% CI: 2.35(1.42, 3.88)] (Table 9).

Table 9: Factors Associated with MHM Program Acceptabilityamong School Girls in Libo Kemekem District in the Binary and Multivariable Logistic Regression Analysis, April 2023

Variable	Acceptability		COR(95 % CI)	AOR(95 % CI)	P-value
	Good	Poor			
Age Group					
11-13	48	52	1	-	
14-16	204	210	1.05 (0.68, 1.62)	-	
17-19	71	41	1.88 (1.08. 3.24)	-	
Residence					
Urban	44	56	1.44 (0.93,2.21)	-	
Rural	279	247	1	-	
Religion					
Orthodox	191	204	1	-	

Muslim	132	99	1.42 (1.03, 1.98)	-	
Fathers Occupation					
Farmer	192	195	1	-	
Merchant	89	75	1.20 (0.84, 1.74)	-	
Employee	42	33	1.29(0.79, 2.13)	-	
Maternal Occupation					
Housewife	199	239	1	1	
Merchant	86	37	2.79(1.82, 4.29)	2.14(1.37, 3.41)**	0.002
Employee	38	27	1.69(1.00, 2.87)	1.03(0.55, 1.93)	0.923
Father Educational Status					
No formal Education	38	77	1	1	
Primary	83	73	2.30(1.40, 3.80)	2.09(1.18, 3.70)*	0.012
Secondary & above	109	88	12.51(1.55, 4.05)	1.37(0.74, 2.53)	0.314
College and above	93	65	2.90(1.76, 4.78)	1.34(0.71, 2.51)	0.362
Maternal Education					
No formal education	45	98	1	1	
Primary	79	91	1.18 (1.19, 3.00)	1.11(0.65, 1.89)	0.697
Secondary	116	76	3.32 (2.82, 5.24)	2.25(1.31, 4.03)**	0.006
College and above	83	38	4.76 (2.82, 8.00)	3.00(1.50, 5.88)**	0.002
Type of Pad Used					
Sanitary pad	311	287	2.99 (0.76, 10.9)	-	
Old /new clothes	8	7	2.67 (0.51, 13.89)	-	
Don't use pad	5	8	1	-	
Buyers of Sanitary Pads					
Respondent herself	35	64	1	1	
School donation	193	119	1.45 (0.88, 2.37)	1.48(0.87, 2.5)	0.146
Family	95	120	2.97 (1.85, 4.74)	2.35(1.42, 3.88)***	0.001
Frequency of Changing Pads Per Day					
Do not change	14	20	1	1	
One time	193	127	0.94(0.46, 1.94)	1.82 (0.85, 3.89)	0.123
Two & above times	116	156	2.04(1.47, 2.84)	1.01 (0.47, 2.17)	0.978

Note: the Hosmer and Lemeshow test p-value was 0.35. * P-value ≤ 0.05, ** P-value ≤ 0.005, *** P-value ≤ 0.001.

Discussion

This study was conducted to evaluate the MHM program implementation status among primary schools in Libo Kemkem district, south Gondar zone, Northwest Ethiopia. Therefore, the program was evaluated with three dimensions (availability, affordability, and acceptability) using an access framework. In this evaluation, the overall implementation status was judged as poor (< 60%), fair (60–80%), and good (≥ 80%). This cut of points was determined during the Evaluability assessment (EA) along with the stakeholders.

The overall MHM resources available in the primary schools in the district were 96.5 %. The finding is incongruent with the study conducted in the survey report of Adama City Administration and rural Kebeles in Adama Woreda of Oromia Regional State, which discovered that MHM rooms with bathing areas and necessary materials, 14 schools' latrines have locks, adequate water, and soap for hand-washing (outside latrines) and menstrual washing (inside latrines), and disposal bins, more than half of girls 56% reported no access to water in school [14,15]. The possible reason might be socio-demographic factors of program implementers, and stakeholders, and they may have high training opportunities for the school girls and the school's focal person.

The overall affordability performance of the MHM program in this evaluation was 66.81%, school girls who used sanitary pads (95.69 %), school girls who have alternative sanitary pads (96.96%), and school girls wronged sanitary pads two and above per day (94.57%)

The study shows in Bangladesh the cost of sanitary pads is significant with the MHM program, about 78% of the respondents was used to old cloth, 17.60% were used sanitary napkin, 3.80% were used new cloth, and 0.60% familiar with cotton [16]. The

possible reason might be that the head of the household who is female controls their finances, to ensure female family members can afford appropriate sanitary protection materials [17].

The overall performance of acceptability of MHM program implementation (73.57%), among school girls who were well aware of MHM services, was higher than compared with their counterparts Amhara region of a total of 72.6% had a good level of understanding of menstrual hygiene management. One-third of the schoolgirls had poor menstrual hygiene habits, which may have an impact on their academic performance and reproductive health the qualitative study conducted in Malawi some of the cultural beliefs and practices associated with girls during menstruation such as denying girls talking to male [18]. The possible reason behind this might be previous experience increases the knowledge and awareness of school girls in the MHM program which may contribute to their acceptance and utilization of the program services.

This study identified maternal occupation, maternal education, paternal educational status, and buyers of sanitary pads as significant predictors of MHM program acceptability among school girls in the Libo Kemkem district. Accordingly, the school girls whose fathers had a primary level of education had higher odds of MHM program acceptability when compared to those school girls whose fathers had no formal education. This association might be due to the reason that most of the time maternal education plays a vital role in discussing with husbands they may feel like mothers and gain positive thinking from their partners. Similarly, the odds of MHM program acceptability among school girls whose mother had secondary education was higher than those school girls whose mother had no formal education. Similarly, school girls whose mothers had education levels of college and above had higher odds of MHM program acceptability than those school girls whose mothers had no formal education. This indicated that as the maternal educational status increased the MHM program acceptability of school girls increased. A Similar study conducted in Western Ethiopia to determine MHM practice among adolescent school girls reported that the increased level of maternal educational status increases the MHM practices of their school children [19]. The reason behind this might be that educated mothers and women may break the cultural taboo to shy away from discussing menstruation and its management with their young daughters. This may make school girls understand the biological facts and hygienic management of menstruation [20].

In this evaluation study, those school girls whose mothers are merchants had also an increased odds of MHM acceptability compared to those school girls whose mothers are housewives. This was supported by similar studies conducted in Central Ethiopia Cross-Sectional Study got information about menstruation from mothers. The observed association might be due to women and mothers having full rights to spend money on sanitary materials and relief economic independencies that may solve menstrual hygiene difficulties due to lack of appropriate sanitary protection products [20].

Finally, this study also reported those school girls whose family members buy their sanitary pads had higher odds of MHM program acceptability in schools compared to those school girls who buy their sanitary pads by themselves.

Ethical Consideration

Ethical clearance was obtained from the University of Gondar research ethical review committee (approval no. of IPH/837/6/2015). Another written letter was obtained from Amhara Public Health Institute, south Gondar Health dept., and Libo-kemkem district health office for further procedures. Written informed consent was also obtained from each participant who had formal education, such as students, Libo-kemkem district health officer, Libo-kemkem district education officer, and illiterate participants have been obtained from a parent. All methods were carried out under relevant guidelines and regulations.

Conclusion

This evaluation assessed the implementation status of the MHM program mainly focused on affordability, availability, and acceptability dimensions. The overall implementation status of the program was judged as Good. The performance of the MHM program acceptability among school girls besides having fathers who had a primary level of education, having mothers who had secondary education, having mothers who had college and above educational level, having mothers who are merchants, having family members who buy sanitary pads for school girls were identified as significant predictors of MHM program acceptability among school girls the district.

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Authors' Contributions

All authors contributed to the preparation of the manuscript. MM- was involved in the conception and design of the research project proposal, collecting, analyzing, and interpreting the data and results, and preparation and critical review of the manuscript, ED and BA revised the analysis and revised the final drafts of the paper.

All other authors (CY and GM) were involved in reviewing the research project proposal and interpretation of results as well as preparation and critical review of the manuscript.

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Competing Interest: The authors declare that they don't have any conflict of interest in any aspect of the article.

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