ISSN: 2976- 1077 (Online)

http://doi.org/10.58196/jhswn/v15.1.170

Knowledge, Attitude, and Practice on Menstrual Hygiene Management among Deaf Adolescents of Dhaulagiri Deaf Residential Secondary School, Baglung, Nepal

Authors: Nika Shakya[1], Pratikshya Bhattarai[1], Prinisha Baidya[1], Ruby Thapaliya[1], Shristi Manandhar[1] and Sushma Adhikari[1]

Affiliation: The Orange Initiatives, Manbhawan, Kathmandu, Nepal

Publishing Process
Received on: June 15, 2025
Finalized to publish: August 20, 2025
Open Access 4.0
Published date: September 17, 2025

Abstract: Menstrual hygiene management (MHM) remains an under-addressed component of adolescent health, with deaf adolescents facing distinct challenges due to their marginalized status. This study explores the Knowledge, Attitude and Practices and challenges of MHM among deaf adolescents at Dhaulagiri Deaf Residential Secondary School in Baglung, Nepal. A mixed-methods approach was employed, with 81 adolescents from grades 6 to 10 participating. The research utilized a de facto census method. Data was collected through a self-administered structured questionnaire and in-depth interviews with 15 adolescents across various grades. The major findings revealed that 83% of respondents recognized menstruation as a natural process, while 20% had poor knowledge, including 12% who believed it to be a disease. Attitudinally, 69% considered menstrual blood impure, reflecting deep-rooted cultural beliefs, and 40% faced restrictions from religious spaces and kitchens during menstruation. In terms of hygiene practices, 100% washed their hands after changing pads, and 97% cleaned their genitals frequently. Furthermore, 67% struggled to access menstrual hygiene information in sign language, and 74% reported school absenteeism during menstruation at least once, showcasing the depth of the issue. In conclusion, this study underscores the importance of inclusive menstrual health education, enhanced infrastructure, and targeted policy interventions to support deaf adolescents in managing menstruation with dignity and ease.

Keywords: Attitude, Deaf, Knowledge, Management, Menstrual hygiene.

Declaration: There is no conflict of interest, and the ethics of the research are adhered to. A detailed declaration is included at the end of the article.

Introduction

Menstruation is a natural biological process that generally begins between the ages of 10 to 18 and continues until menopause, occurring monthly in women and girls.[1] Despite being a regular phenomenon, menstruation is surrounded by stigma and misconceptions, particularly in developing countries, where adolescent girls often lack adequate information and resources for proper menstrual hygiene.[2,3] This lack of awareness is even more pronounced among deaf adolescents, who face unique challenges due to communication barriers and limited access to inclusive health education. As a result, they may experience fear, embarrassment, and confusion at menarche, affecting their overall well-being and school participation [4,5,6,7]. The objective of the study is to Identify Knowledge, Attitude, and Practice on Menstrual Hygiene Management among Deaf Adolescents.

Corresponding Author: Prinisha Baidya; Email: prinishabaidya123@gmail.com

Methodology

The research applied a Descriptive cross-sectional study on adolescents from grades six to ten of Dhaulagiri Deaf Residential Secondary School. The sampling strategy was a de facto census approach.

Data Collection Tools and Techniques

Table 1: Data Collection Tools and Techniques

SN	Technique	Tools
1	Survey	Self-administered structured questionnaire with closed-ended questions
2	In-Depth Interview	Semi-structured guidelines used through open-ended questions
3	Observation Checklist	Observation checklist to assess sanitation facility conditions

Data Analysis Techniques

Quantitative analysis: Each questionnaire was assigned to a unique ID and entered MS Excel. After frequency checks and data cleaning, the data were exported to SPSS, variables re-coded, and descriptive frequencies calculated.

Qualitative analysis: IDI recordings and notes transcribed, translated into English, and thoroughly reviewed. The data were organized into seven key themes for thematic analysis, and findings were presented accordingly.

Findings

Table 2: Demographic analysis

Characteristics	Frequency	Percentage
Age (years)		
Less than 14	32	39.50
15 and above	49	60.50
Sex		
Male	39	48.15
Female	42	51.85
Family type		
Nuclear	34	41.98
Joint	43	53.09
Extended	4	4.94
Head of households		
Mother	37	45.68
Father	22	27.16
Both	22	27.16
Education level of the mother		
Illiterate	15	18.52
Informal Education	11	13.58
Primary Education	40	49.39
Secondary Education	14	17.28
Tertiary Education	1	1.23
Education level of the father		
Illiterate	12	14.81

Corresponding Author: Prinisha Baidya; Email: prinishabaidya123@gmail.com

Characteristics	Frequency	Percentage
Informal Education	4	4.94
Primary Education	20	24.69
Secondary Education	29	35.80
Tertiary Education	4	4.94
Others	4	4.94
Illiterate	8	9.88
Occupation of the mother		
Unemployed	31	38.27
Self-employed	23	28.40
Regular salaried	14	17.28
Labour	12	14.82
Don't know	1	1.23
Occupation of father		
Unemployed	12	14.81
Self-employed	13	16.05
Regular salaried	32	39.51
Labour	13	16.05
Don't know	7	8.64
Others	4	4.94

The study reveals that most respondents are aged 15 years and above (60.5%), with a nearly balanced distribution between males (48.15%) and females (51.85%). Most families belong to joint households (53.09%), and mothers are more frequently reported as heads of households (45.68%) compared to fathers. In terms of education, mothers are predominantly educated up to the primary level (49.39%), whereas fathers are more likely to have reached secondary education (35.80%). Regarding occupations, a large proportion of mothers are unemployed (38.27%), while most fathers are in regular salaried jobs (39.51%). (Table 2)

Knowledge of Menstruation

Table 3: Knowledge of Menstruation

Characteristics	Frequency	Percentage
Information source for menstruation		
Mother	67	27.02
Teacher	41	16.53
Coursebook	37	14.92
Friends	32	13.90
Social media	26	10.48
TV/Radio/Magazines	21	8.47
Relatives	18	7.26
Others	7	2.42
Perception of menstruation		
Physiological process	67	83.00
Disease	10	13.00
Untouchability	2	2.00
Don't know	2	2.00
The most common reason for using sanitary pads		
To manage blood flow and maintain hygiene	68	84.00
Instead of taking a shower	4	5.00
To relieve pain	1	1.00
Don't know	8	10.00
Frequency of changing a sanitary pad		
At least every 4-6 hours	59	73.00
Every 6-12 hours	7	9.00
More than 12 hours	1	1.00

Corresponding Author: Prinisha Baidya; Email: prinishabaidya123@gmail.com

Characteristics	Frequency	Percentage
Don't know	14	17.00
Methods for disposing of used sanitary pads		
Burning	42	51.85
Both burning and burying	15	18.51
Throwing into a garbage bin	12	14.82
Don't know	12	14.82
Estimation of blood loss during menstruation		
30ml	13	16.05
60ml	8	9.88
90ml	11	13.58
150ml	3	3.70
Don't know	46	56.79
Average age of menopause in women		
40-45	13	16.04
45-50	23	28.40
50-55	3	3.70
55-60	21	25.93
Don't know	21	25.93
Common menstrual symptoms experienced		
Cramps	43	38.00
Headache	19	17.00
Backpain	18	16.00
Sore breast	2	1.00
All the above	13	13.00
Don't know	17	15.00
Menstrual blood is impure	56	69.14
Women menstruating should avoid physical activities	15	18.52
Duration of menstrual cycle: Typically, 28 days, ranging from 21-35 days	42	51.85
Awareness of health risks from poor menstrual hygiene	25	30.86

The findings reveal that mothers are the primary source of information on menstruation (27.02%), followed by teachers and coursebooks, while social media and relatives play a smaller role. Most respondents (83%) perceive menstruation as a physiological process, though a small proportion still view it as a disease or associate it with untouchability. The majority use sanitary pads mainly for hygiene (84%), change them every 4–6 hours (73%), and prefer burning as a disposal method (51.85%). However, knowledge gaps remain, as over half (56.79%) could not estimate blood loss, and many were unsure about the average age of menopause. Commonly reported menstrual symptoms include cramps (38%), headaches (17%), and back pain (16%), with persistent misconceptions such as menstruation being impure (69.14%) and restrictions on physical activity (18.52%). (Table 3)

Overall, Knowledge Level

Correct answers were scored as one; for Menstrual hygiene multiple choice questions (MSMCQs) with four correct options, each was awarded 0.25. Total scores ranged from zero to ten and were categorized as poor (less than four), satisfactory (between four and seven), and good (above seven).

Corresponding Author: Prinisha Baidya; Email: prinishabaidya123@gmail.com

Table 4: Overall knowledge level analysis

Knowledge Level		
Poor	**Satisfactory**	**Good**
16	43	22
20%	53%	27%

Overall, knowledge was found satisfactory with 53 percent, and good 27 percent, combined with good and satisfactory made 80 percent have some knowledge on menstruation. Only 20 percent need to improve their knowledge of menstruation and hygiene. (Table 4)

Attitude Towards Menstruation

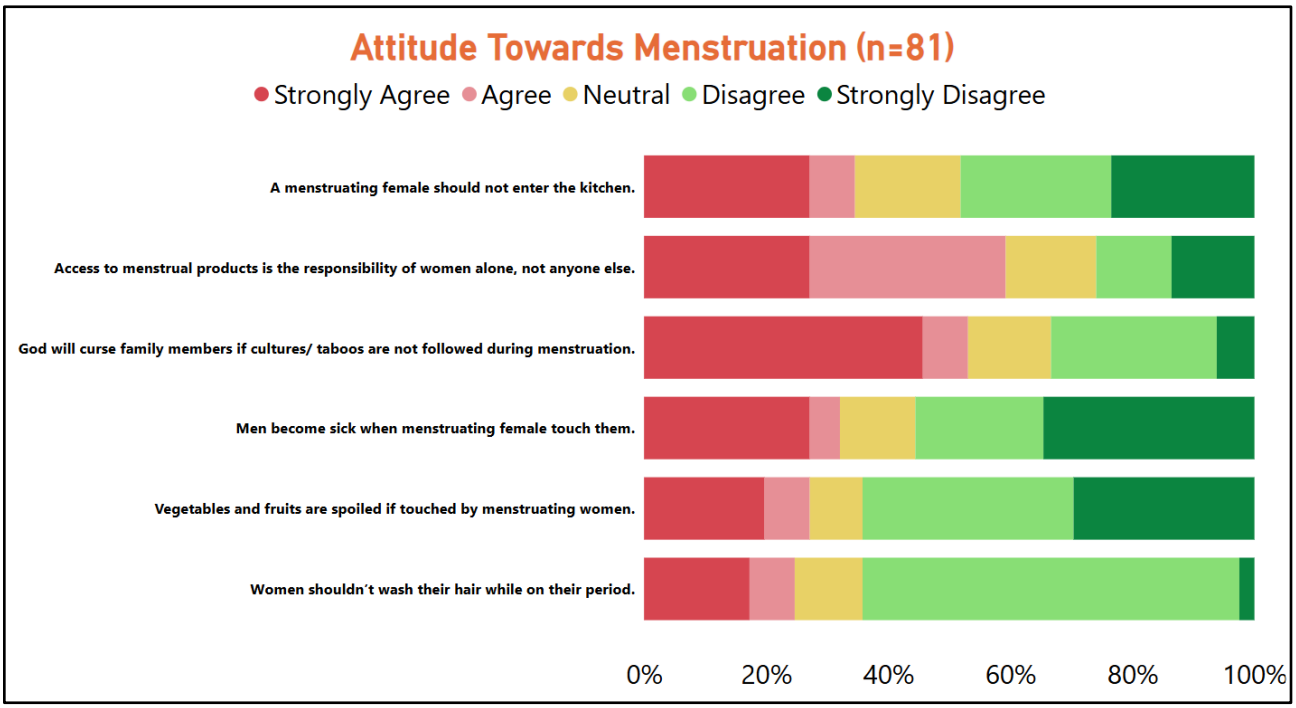

Figure 1. Attitude towards menstruation

Practices Followed During Menstruation

This section targeted female participants. Four had not begun menstruating, so practice-related questions were asked of the remaining 35. Among them, most adolescents 15(42.86%) experienced their first menarche at the age of 12. The next most common age was 13, with ten (28.57%) of the adolescents.

Corresponding Author: Prinisha Baidya; Email: prinishabaidya123@gmail.com

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Practices During Menstruation

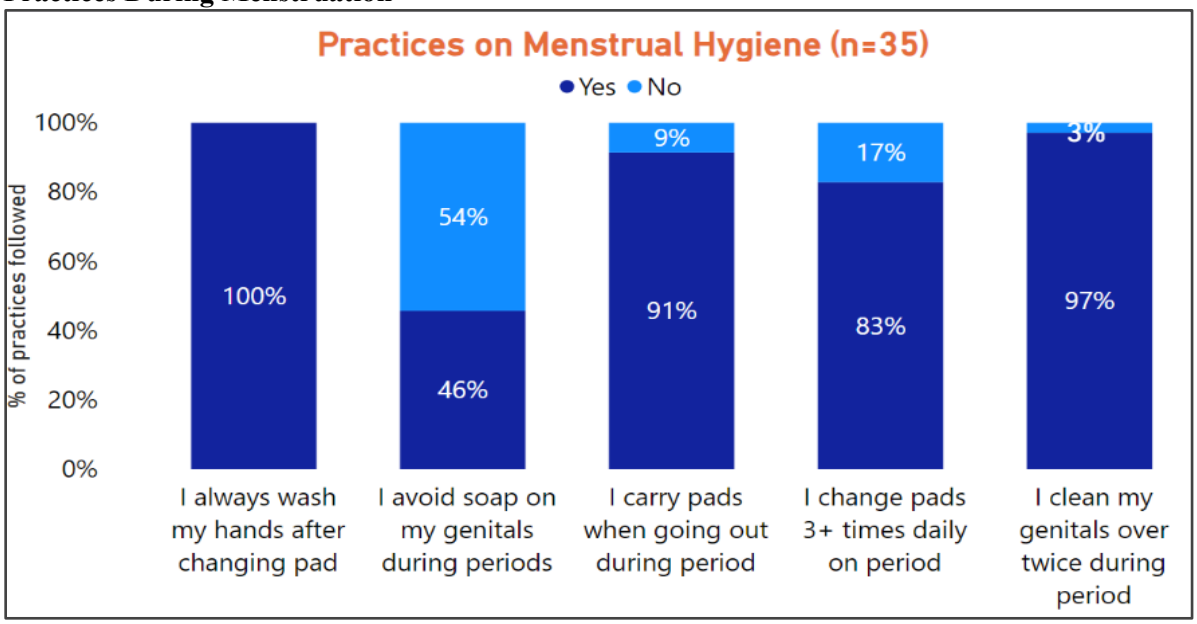

Figure 2. Practices during menstruation

Overall Analysis of Practice Level

The correct answer was given a score of one, and total scores were calculated by summing individual scores. With scores ranging from zero to six, results were categorized as poor (below two), average (three to four), and good (more than four).

Table 5: Overall Analysis of Practice Level

Practice Level		
Poor	**Average**	**Good**
0	14	21
0%	40%	60%

Practical aspects of menstruation management were found to be 40 percent average and 60 percent good. It has been indicated that the students are managing their menstruation properly. (Table 5)

Challenges Faced During Menstruation

Table 6: Challenges faced during menstruation

Characteristics	Frequency	Percentage
Ever missed school during menstruation		
Yes	26	74.29
No	9	25.71
Frequency of school missed during menstruation		
Sometimes	15	57.69
Rarely	11	42.31
Experience of discomfort during menstruation		

Corresponding Author: Prinisha Baidya; Email: prinishabaidya123@gmail.com

Characteristics	Frequency	Percentage
Yes	34	97.14
No	1	2.86
Restriction faced during menstruation *MSMCQ		
Religious restrictions	21	21.88
Entering kitchen	18	18.75
Physical activity/playing	12	12.50
Sleeping on the floor	9	9.38
Attending a family function	8	8.33
Avoiding visits to others' homes	8	8.33
Touching a family member	7	7.29
No restrictions at all	6	6.25
Household work	5	5.21
Everyday commute to school	2	2.08
Types of discomfort during menstruation		
Cramps	32	32.00
Backache	19	19.00
Vomiting	12	12.00
Hot flash	10	10.00
Mood swings	10	10.00
Constipation	6	6.00
Sore breast	5	5.00
Nausea	4	4.00
Diarrhea	2	2.00
Management of discomfort during menstruation		
Rest	30	34.07
Use a hot water bag	29	31.86
Drinking warm drinks	28	30.77
Consume painkiller	1	1.10
Physical activity	1	1.10
Tolerate and do nothing	1	1.10
Challenges faced by deaf girls regarding menstrual health		
Difficulty in accessing information in sign language	31	67.39
Lack of understanding or misconceptions regarding practice	12	26.09
Challenges in communicating symptoms or needs with teachers and caregivers	2	6.52

The results show that a majority of girls (74.29%) reported missing school during menstruation, most often sometimes (57.69%), while nearly all (97.14%) experienced discomfort. Common restrictions faced included religious prohibitions (21.88%), being barred from entering the kitchen (18.75%), and limiting physical activity (12.50%), though only a few reported no restrictions (6.25%). The most frequent discomforts were cramps (32%), backache (19%), and vomiting (12%), which were mainly managed through rest (34.07%), hot water bags (31.86%), or warm drinks (30.77%). Challenges were especially pronounced for deaf girls, with most struggling to access information in sign language (67.39%), while others faced misconceptions (26.09%) or difficulties in communicating needs to teachers and caregivers (6.52%). (Table 6)

Qualitative Findings

To gain in-depth insights into the experiences and challenges of deaf female adolescents, we conducted IDIs with 15 participants.

Corresponding Author: Prinisha Baidya; Email: prinishabaidya123@gmail.com

Menstrual Practices: The female adolescents shared varied experiences of menarche, with ages ranging from 10 to 14 years. Many knew about menstruation beforehand but still felt scared. Cultural practices included avoiding interaction with men, isolation for several days, with some female adolescents being hidden in their own room, other people's houses, or in dark rooms.

Availability of Menstrual Hygiene Products: Female adolescents reported easy access to free sanitary pads at their hostel. However, access in their homes varied. Some could easily buy pads locally, while others had to travel far and relieve reusable cloth, especially during their first menstruation.

Menstrual Symptoms: During menstruation, female adolescents commonly experience physical symptoms like cramps, headaches, and weakness, managed through rest, hot water, massage, medicine, or light exercise. Mood swings were the most common emotional symptom, followed by irritability and stress. Coping methods included talking to friends, resting, staying alone, or seeking support from mothers or wardens.

Impact on Daily Life: Menstruation impacted daily life for many female adolescents, causing school absenteeism and reduced social participation, especially during the initial days. Rest and isolation were common coping strategies, and emotional effects like sadness over missed opportunities were frequently noted. While teachers were generally supportive, male family members were often uninvolved.

Access to Information and Education: Female adolescents mainly relied on mothers, elder sisters, peers, and occasionally teachers for menstrual health information. Mothers provided practical advice, while sisters offered early guidance. Peers were key support sources, especially when family input was lacking. Some felt unprepared during their first period due to delayed guidance.

WASH Facilities: Water scarcity poses a major challenge for female adolescents in managing menstrual hygiene, despite the school having separate toilets and a pad disposal machine. The lack of water makes bathing and washing clothes difficult, with all students forced to bathe in the river. The school doesn't have enough water for basic needs during menstruation, which affects female adolescents.

Cultural Beliefs and Practices: Many girls face cultural taboos at home, including sleeping separately on the floor, avoiding contact with male family members, and being barred from kitchens or temples. These practices make them feel isolated and discriminated against, though they feel safer and more accepted at school or in hostels. Attempts to challenge norms at home were often dismissed.

Observation Findings

During sanitation facilities observations reported through checklists at the school, it was noted that the separate restrooms for boys and girls encouraged privacy and menstrual hygiene. There were handwashing stations, necessary for hygiene. However, because of irregular cleaning and a limited water supply, the restrooms and handwashing stations were only usable but not clean. For privacy and security, girls' toilets were equipped with doors and locks, and dustbins were available for sanitary pads. Although the school was operational overall, it lacked adequate hygiene, underscoring the need for improved water access

Corresponding Author: Prinisha Baidya; Email: prinishabaidya123@gmail.com

Discussion

The study examined various aspects of menstrual health among adolescent girls, highlighting hygiene practices, access to products, and socio-cultural barriers. Findings stated that 83% of respondents changed their sanitary pads three or more times a day, in contrast to 42.6% reported in national data. Additionally, 100% of participants dried their menstrual cloth in direct sunlight after washing, compared to 92% in broader Nepal data. For managing menstrual discomfort, 31.87% of respondents utilized a hot water bag, while 55.4% of Nepalese girls reportedly use this method. [8] School absenteeism was high in the study, with 74.29% missing school at least once due to menstruation, greater than the national statistic of 26.7%. Regarding disposal methods, 42 out of 81 respondents preferred burning used sanitary pads, aligning with 945 out of 3,489 respondents in the national data. Cultural and religious restrictions were barred; 21.88% not allowed to visit temples during menstruation, while 65% of women nationally were barred from religious activities. [8, 9,10]
Hostel residents had easy access to free sanitary pads, while at home, many used old reusable cloths. Nationally, disposable pads were common in Province One, Gandaki, and Lumbini, whereas reusable pads were more prevalent in Province Two, Bagmati, Karnali, and Sudurpashchim. 67 of 81 respondents in the study reported understanding menstruation as a normal physiological process, consistent with national indicators showing 2,242 of 3,495 girls know that menstruation is a healthy process [8,11]. In this study, 67 out of 81 participants cited their mothers as the primary source of information. Similarly, in national data, 2,028 out of 2,532 respondents identified their mothers as the main source of menstrual education.[8]

Conclusion

This research highlights experiences and challenges in menstrual management among deaf adolescents. While most viewed menstruation as natural, there are myths like considering it a disease or associating it with untouchability. There is a lack of knowledge about hygiene risk and cycle variation. Despite favorable attitudes, traditional beliefs and mobility restrictions persist. Sanitary pad use and hygiene practices are common. Water shortage was a major issue. Emotional upset, isolation, and school absenteeism are additional problems. The results highlight the necessity of sign language-based teaching, infrastructure development, and a congenial environment.

Declarations, Author's Contribution, and Acknowledgement

The Source of Funding: This research was funded by Togglecorp Solutions Pvt. Ltd., a research and development company based in Manbhawan, Lalitpur, Nepal, with a total grant of NRs 1,50,450.00. Togglecorp will not derive any financial or competitive advantage from the outcomes of this research. Their support is purely philanthropic and intended to promote public health knowledge and practices, without influencing the research process or findings

Conflict of Interest: We, the authors, declare that there are no conflicts of interest related to this research. The study was funded by Togglecorp Solutions Pvt. Ltd., Manbhawan, Lalitpur, whose support is purely philanthropic and does not influence the research process or outcomes. This was the first collaboration between Dhaulagiri Deaf Residential Secondary School and Togglecorp, with no prior agreements that bias the study. We have no personal or financial interests affecting the work and we have conducted ethical, unbiased research. We confirm that nothing compromises the integrity or impartiality of this research.

Ethical Approval: Ethical approval for this study was obtained from the Nepal Health Research Council (NHRC), reference number 691. Before data collection, formal permission was secured from Dhaulagiri Deaf Residential Secondary School. Since the school is residential, the principal acted as the guardian for all

Corresponding Author: Prinisha Baidya; Email: prinishabaidya123@gmail.com

adolescent participants under 18 years of age and provided consent on their behalf. Furthermore, informed consent was obtained from all participants before their voluntary involvement in the research. The consent information was translated using sign language translators, and participants were asked to confirm that they fully understood it.

Author's Contribution

- Nika Shakya oversaw translations, transcriptions, and led qualitative data analysis.
- Pratikshya Bhattarai coordinated school liaison, ethical approval, and questionnaire design.
- Prinisha Baidya managed finances, logistics, pre-testing, and led the research proposal drafting.
- Rubi Thapaliya led data collection in Baglung and ensured quantitative data quality.
- Shristi Manandhar compiled the final research report and assisted with literature review and field data collection.
- Sushma Adhikari conducted literature reviews, led quantitative data analysis, and supported field data collection.

Acknowledgement

We would like to express our heartfelt gratitude to Togglecorp Solutions Pvt. Ltd., Manbhawan, Lalitpur, for sponsoring this research and providing the necessary resources and support to make this study possible. Your encouragement and dedication to promoting impactful initiatives have been invaluable. We extend our sincere appreciation to the Dhaulagiri Deaf Residential Secondary School, Baglung, for their cooperation throughout the research process. Special recognition is due to the principal, whose leadership and commitment created an environment of collaboration and encouragement. We are equally grateful to the dedicated teachers and staff, whose efforts in providing necessary insights and logistical support were instrumental in shaping the outcomes of this research. Our gratitude also goes to Central Secondary School for the Deaf, Naxal, Kathmandu, for allowing us to conduct the pre-testing of our questionnaire. The feedback and insights gained during this phase were essential in refining our research tools. We are especially grateful to the students who provided us with the data; without their participation, this research would not have been possible. Along with that, a special thank you to the Nepal Health Research Council (NHRC) for their guidance and ethical approval to conduct this research, ensuring its integrity and compliance with ethical standards. Finally, our warm and heartfelt gratitude is revealed to everyone who has direct or indirect contribution by their encouragement and cooperation for the completion of this research.

Availability of Data and Materials: All-important findings and related data have been included in the manuscript. However, the datasets generated and/or analyzed during this study are available from the corresponding author upon reasonable request. Researchers interested in accessing the data can contact the corresponding author to obtain the necessary information, subject to any ethical or privacy restrictions to protect participant confidentiality.

Consent for Publication: All authors have reviewed and approved the manuscript and consent to its publication.

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Corresponding Author: Prinisha Baidya; Email: prinishabaidya123@gmail.com