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# The Recent Method Hormonal Intrauterine Device (LNG-IUS) Contraceptive in Bangladesh

[1]Dr. Shohela Perveen, *Consultant, Department of Obstetrics and Gynaecology, OGSB Hospital and Institute of Reproductive & Child Health, Dhaka, Bangladesh*
[2]Prof. Dr. Farhana Dewan, *President, OGSB Hospital and Institute of Reproductive & Child Health, Dhaka, Bangladesh*
[3]Dr. Momataz Begum, *Consultant, Department of Obstetrics and Gynaecology, OGSB Hospital and Institute of Reproductive & Child Health, Dhaka, Bangladesh*
[4]Dr. Sumiya Akther, *Consultant, Department of Obstetrics and Gynaecology, OGSB Hospital and Institute of Reproductive & Child Health, Dhaka, Bangladesh*
[5]Sister Afsana Akter, *Nurse, Department of Obstetrics and Gynaecology, OGSB Hospital and Institute of Reproductive & Child Health, Dhaka, Bangladesh*

***ABSTRACT***
***Background:*** *The Levonorgestrel Intrauterine System (LNG-IUS) is a highly effective, long-acting reversible contraceptive with additional non-contraceptive benefits. Despite its global popularity, data on its use and acceptability in low- and middle-income countries like Bangladesh are limited.*
***Objective:*** *To assess the acceptability, initial experiences, and satisfaction rates of LNG-IUS among Bangladeshi women.*
***Methods:*** *This descriptive cross-sectional study was conducted at OGSB Hospital and Institute of Reproductive & Child Health, Dhaka, Bangladesh from June 2022 to May 2023. Fifty-four women who opted for LNG-IUS were enrolled using convenience sampling. Data were collected through face-to-face interviews using structured questionnaires at insertion, one month, and six months post-insertion.*
***Results:*** *The mean age of participants was 31.28 ± 9.332 years, with 88.9% being housewives. Prior to insertion, 46.3% were using contraception, primarily oral contraceptive pills. The main reasons for choosing LNG-IUS were long-lasting contraception (61.1%) and management of excessive menstrual bleeding (29.6%). All insertions were successful with no immediate complications. At one-month follow-up, 20.4% reported no complaints, while minor issues, primarily related to bleeding patterns, were reported by some users. Satisfaction rates increased from 68.5% at one month to 77.8% at six months post-insertion.*
***Conclusion:*** *LNG-IUS appears to be a feasible and acceptable contraceptive option for Bangladeshi women, with high insertion success rates and increasing satisfaction over time. The dual benefits of contraception and menstrual management are key motivators for its use. Further research is needed to assess long-term acceptability and strategies for wider implementation in Bangladesh.*
***Keywords:*** *Levonorgestrel Intrauterine System, LNG-IUS, contraception, Bangladesh, Women's health, Family planning*

## I. INTRODUCTION

The hormonal intrauterine device (IUD) is a widely used method of birth control [1]. A small amount of the hormone levonorgestrel is released into the uterus using this extremely efficient and reversible approach. In comparison to other hormonal techniques, the hormonal IUD offers distinct therapeutic and non-contraceptive benefits, including less bleeding and pain during menstruation, as well as fewer adverse effects [2].

Since the Mirena® brand of hormonal IUDs was introduced to the market in 2001, the United States has seen a rise in the prevalence of IUDs overall among American women utilizing contraception. This rises from 2% of the method mix in 2000 to over 12% in 2014 [3].

For the treatment of endometriosis and menorrhagia, among other disorders, the hormonal IUD has also given women an option to more invasive hysterectomy treatments [4].

The majority of the research produced to date has come from high-income areas, even though rates of hormonal IUD satisfaction and continuation are high [5-7]. Because of the high expense of the device, many people living in low- and middle-income countries (LMICs) are still unable to obtain hormonal IUDs. In certain LMIC nations, low quantities of hormonal IUDs that are sold commercially are available from providers like Bayer and Pregna. The majority of people cannot afford the approach because of a range of expenses that have been documented for the client, which can reach $400 [1]. Limited quantities of an unbranded hormonal IUD

product have been donated by the International Contraceptive Access (ICA) Foundation, a public-private partnership between Bayer Pharmaceuticals and the Population Council, to organizations in 36 countries that provide free or low-cost family planning services to women, since 2003. Approximately 21,000 units of this product were donated annually between 2017 and 2019 [8].

Recent changes in the global supply landscape have enhanced the hormonal IUD's affordability. The possibility of increasing method choice in LMIC markets with the hormonal IUD has attracted the attention of global health stakeholders and procurement authorities [1]. The Hormonal IUD Technical Working Group was constituted by the United States Agency for International Development (USAID) in 2015. By strengthening the body of evidence supporting the hormonal IUD, this coordination group hopes to provide women with access to a wider variety of extremely effective contraception choices. Donors, vendors, research institutes, and service providers are among the groups that collaborate to identify and remove the obstacles preventing hormonal IUDs from being sold in underdeveloped nations [1].

Bangladesh has made significant strides in improving access to family planning services since its independence in 1971. The country's family planning program, often hailed as a success story, has contributed to a substantial decline in the total fertility rate from 6.3 in 1975 to 2.3 in 2017-18 [9]. Currently, the most popular contraceptive methods in Bangladesh are oral contraceptive pills (27.4%), injectables (12.4%), and female sterilization (4.6%) [9]. The Levonorgestrel Intrauterine System (LNG-IUS) is a highly effective, long-acting reversible contraceptive method that has gained popularity worldwide. Beyond its contraceptive effects, the LNG-IUS offers several health benefits that could be particularly advantageous in the Bangladeshi context. The most notable is its ability to reduce menstrual bleeding, which can help prevent anemia - a significant health concern among Bangladeshi women [10]. While the initial cost of the LNG-IUS is higher than some other contraceptive methods, its long-acting nature makes it cost-effective over time. A study in the United States found that the LNG-IUS becomes cost-saving compared to short-acting methods within 2-3 years of use [11].

## II. METHODS

**Study design, population, sampling and data collection**

This descriptive type of cross-sectional study was conducted at OGSB Hospital and Institute of Reproductive & Child Health, Dhaka, Bangladesh from June 2022 to May 2023. The study was started from January, 2023. The protocol was presented in the month of April, 2023. A structured questionnaire was developed and pretesting was completed by September, 2023.

The study successfully enrolled 54 respondents during this study's defined data collection period and convenience sampling technique was adopted in this study. Data were collected by paper-based questionnaires through in-person oral face-to-face interviews conducted by me following informed consent procedures.

## III. RESULTS

**Table Ⅰ** shows that the study sample comprised 54 respondents with diverse socio-demographic characteristics. The mean age was 31.28 ± 9.332 years (median 30 years), with the majority (77.8%) falling in the 20–30-year age group. Educational backgrounds varied widely, with 33.3% having more than post-graduate education, 35.2% completing Class 6-10, and 3.7% being illiterate. Occupationally, housewives constituted the vast majority (88.9%) of the sample, followed by students (5.6%), service workers (3.7%), and business owners (1.9%). Geographically, while respondents came from various districts, Dhaka was most represented (25.9%), with other districts such as Brammon Baria, Joypur hat, Munsigonj, and Sirajgonj each accounting for 1.9% of the sample. These findings highlight the demographic diversity within the study population, particularly in terms of age, education, and geographic distribution, while also noting the predominance of housewives in the occupational category.

**Table Ⅰ: Respondents Socio-Demographic characteristics**

| Variable | n | % |
|---|---|---|
| **Age (yrs)** | | |
| Mean±SD | 31.28±9.332 | |
| Median | 30 | |
| ≤20 | 1 | 1.9 |
| 20-30 | 42 | 77.8 |
| 36-45 | 10 | 18.5 |
| ≥66 | 1 | 1.9 |

| | | |
|---|---|---|
| **Educational background** | | |
| Illiterate | 2 | 3.7 |
| Class 1-5 | 9 | 16.7 |
| Class 6-10 | 19 | 35.2 |
| HSC | 6 | 11.1 |
| More than post Graduate | 18 | 33.3 |
| **Occupation** | | |
| Housewife | 48 | 88.9 |
| service | 2 | 3.7 |
| Business | 1 | 1.9 |
| Student | 3 | 5.6 |
| **District** | | |
| Brammon Baria | 1 | 1.9 |
| Dhaka | 14 | 25.9 |
| Joypur hat | 1 | 1.9 |
| Munsigonj | 1 | 1.9 |
| Sirajgonj | 1 | 1.9 |

**Table 1** shows that the study examined various aspects of the respondents' obstetrical, gynecological, contraception, and medical history. Regarding contraception, 46.3% of respondents were using contraceptive methods, with oral contraceptive pills being the most common (29.6%), followed by injectables (9.3%) and condoms (7.4%). The primary reason for liking LNG-IUS was for long-lasting contraception (61.1%), followed by management of excessive menstrual bleeding (29.6%). Menstrual characteristics varied among respondents, with 66.7% reporting regular cycles and 72.2% describing normal menstrual quantity. Dysmenorrhea was reported by 50% of the participants. Nearly half (48.1%) of the respondents were lactating mothers. Regarding obstetrical history, 29.6% had a history of menstrual regulation or abortion, and 59.3% had previously undergone cesarean section delivery. Sexual health issues were also noted, with 18.5% reporting pain during intercourse and 11.1% experiencing bleeding during intercourse. These findings provide a comprehensive overview of the reproductive and sexual health status of the study population, highlighting the diversity in contraceptive use, menstrual patterns, and obstetrical history.

**Table II: Respondents obstetrical, gynecological, contraception and medical history**

| **Using contraceptive method** | | |
|---|---|---|
| Yes | 25 | 46.3 |
| No | 29 | 53.7 |
| **Methods of contraceptive** | | |
| Pill | 16 | 29.6 |
| Condom | 4 | 7.4 |
| Injectable | 5 | 9.3 |
| None | 29 | 53.7 |
| **Reason for liking LNG-IUS** | | |
| For long-lasting contraception | 33 | 61.1 |
| For excessive menstrual bleeding | 16 | 29.6 |
| For long-lasting contraception and excessive menstrual bleeding | 2 | 3.7 |
| Others | 1 | 1.9 |
| Less side effect | 2 | 3.7 |

| | | |
|---|---|---|
| **Menstrual Cycle** | | |
| Regular | 36 | 66.7 |
| Irregular | 18 | 100 |
| **Menstrual Quantity** | | |
| Normal | 39 | 72.2 |
| Abnormal | 15 | 27.8 |
| **Dysmenorrhea** | | |
| Yes | 27 | 50.0 |
| No | 27 | 50.0 |
| **Lactating mother** | | |
| Yes | 26 | 48.1 |
| No | 28 | 51.9 |
| **History MR/Abortion** | | |
| Yes | 16 | 29.6 |
| No | 38 | 70.4 |
| **Pre delivery type** | | |
| Normal | 22 | 40.7 |
| CS | 32 | 59.3 |
| **Pain during intercourse** | | |
| Yes | 10 | 18.5 |
| No | 44 | 81.5 |
| **Bleeding during intercourse** | | |
| Yes | 6 | 11.1 |
| No | 48 | 88.9 |

**Table II** shows that a comprehensive physical examination of the respondents, focusing on cervical and vaginal health, uterine position, and LNG-IUS insertion outcomes. The majority of participants (94.4%) had a normal cervical os, while 5.6% showed abnormalities. Vaginal discharge was present in 37% of the cases. The vaginal wall appeared healthy in 79.6% of respondents, with 20.4% showing signs of infection. Cervical health issues were noted, including pus or ulceration in the cervical Os (11.1%), cervical erosion (14.8%), and bleeding on touch (5.6%). Regarding uterine position, 94.4% of participants had an anteverted uterus, while 5.6% had a retroverted uterus. Pain during uterine movement was reported by 29.6% of the respondents. Notably, there were no difficulties reported during LNG-IUS setup, and no complications were observed in any of the 54 participants (100%) following the procedure. These findings provide a detailed overview of the gynecological health status of the study population and highlight the safety and ease of LNG-IUS insertion

**Table III: PV examination of respondents by speculum and both hands**

| | | |
|---|---|---|
| **Cervical Os** | | |
| Normal | 51 | 94.4 |
| Abnormal | 3 | 5.6 |
| **Discharge** | | |
| Present | 20 | 37 |
| Absent | 34 | 63 |
| Vaginal wall | | |
| Well | 43 | 79.6 |
| Infected | 11 | 20.4 |
| **Pus/Ulcer in Cervical Os** | | |

| | | |
|---|---|---|
| Present | 6 | 11.1 |
| Absent | 48 | 88.9 |
| **Cervical erosion** | | |
| Present | 8 | 14.8 |
| Absent | 46 | 85.2 |
| **Bleeding on touch on Cervix** | | |
| Yes | 3 | 5.6 |
| No | 51 | 94.4 |
| **Uterine position** | | |
| Anteverted | 51 | 94.4 |
| Retroverted | 3 | 5.6 |
| **Pain during uterine movement** | | |
| Yes | 16 | 29.6 |
| No | 38 | 70.4 |
| **Any difficulties during setup LNG-IUS** | | |
| No | 54 | 100.0 |
| **LNG-IUS complication** | | |
| No | 54 | 100.0 |

**Table III** that one month after LNG-IUS insertion, the study assessed problems reported by users (n=54). The majority of users (20.4%) reported no complaints or problems. Specific issues reported included mild bleeding (3.7%), heavy bleeding (1.9%), mild lower abdominal pain with bleeding (1.9%), discomfort (1.9%), and spotting (1.9%). One case (1.9%) resulted in removal of the device. It's noteworthy that for a significant portion of the participants (66.7%), no specific problem or complaint was recorded, which could indicate either an absence of issues or missing data. These findings suggest that while most users tolerated the LNG-IUS well in the first month, a small percentage experienced minor complications, primarily related to bleeding patterns.

**Table Ⅳ: Problem of user after 1 month using LNG-IUS**

| Variables | Frequency | Percent |
|---|---|---|
| Discomfort | 1 | 1.9 |
| Heavy Bleeding | 1 | 1.9 |
| Mild Bleeding | 2 | 3.7 |
| Mild LAP, Bleeding | 1 | 1.9 |
| No | 5 | 9.3 |
| No Complain | 6 | 11.1 |
| Potting | 1 | 1.9 |
| Removed | 1 | 1.9 |
| Total | 54 | 100.0 |

**Table IV** show that user satisfaction with LNG-IUS at two time points: 1 month and 6 months post-insertion. At the 1-month follow-up, 68.5% of users (n=37) reported satisfaction with the device, while 31.5% (n=17) were not satisfied. Notably, user satisfaction increased by the 6-month follow-up, with 77.8% of users (n=42) reporting satisfaction, and only 22.2% (n=12) expressing dissatisfaction. This represents a 9.3 percentage point increase in satisfaction over the five-month period. The total number of participants remained constant at 54 for both time points, indicating no loss to follow-up. These findings suggest that user satisfaction with LNG-IUS tends to improve over time, possibly as users adjust to the device and initial side effects subside.

**Table Ⅴ: Satisfaction of LNG-IUS user after 1 month and 6 months**

| **LNG-IUS user after 1 month** | | |
|---|---|---|
| **Variables** | **Frequency** | **Percent** |
| yes | 37 | 68.5 |
| No | 17 | 31.5 |
| Total | 54 | 100.0 |
| **LNG-IUS user after 6 months** | | |
| **Variables** | **Frequency** | **Percent** |
| yes | 42 | 77.8 |
| No | 12 | 22.2 |
| Total | 54 | 100.0 |

## IV. DISCUSSION

The study population primarily consisted of young to middle-aged women (mean age 31.28 ± 9.332 years), with a wide range of educational backgrounds. The high proportion of housewives (88.9%) in the sample reflects the sociocultural context of the study area. This demographic profile is crucial for understanding the target population for LNG-IUS use in similar settings.

The gynecological and obstetrical history of the participants revealed a mix of reproductive health experiences. The high rate of previous cesarean sections (59.3%) aligns with the rising trend of C-sections in many developing countries, including Bangladesh [12]. This finding underscores the importance of effective contraception for these women, as repeat pregnancies could pose higher risks.

Prior to LNG-IUS insertion, less than half of the participants (46.3%) were using any form of contraception, with oral contraceptive pills being the most common method. This low rate of contraceptive use highlights the unmet need for effective, long-acting contraceptive options in this population.

The primary reasons for choosing LNG-IUS – long-lasting contraception (61.1%) and management of excessive menstrual bleeding (29.6%) – align with the known benefits of this method [13]. This suggests that women in this setting are seeking contraceptive options that offer additional non-contraceptive benefits, particularly in managing menstrual disorders.

The physical examination findings revealed various gynecological conditions among the participants, including vaginal infections (20.4%) and cervical abnormalities. Despite these pre-existing conditions, LNG-IUS insertion was successfully completed in all cases without complications. This supports the safety and feasibility of LNG-IUS insertion even in settings where comprehensive pre-insertion screening may be challenging [14].

The one-month follow-up revealed that while most users (20.4%) reported no complaints, a small percentage experienced minor issues, primarily related to bleeding patterns. This is consistent with known short-term side effects of LNG-IUS [15]. The low rate of removal (1.9%) at one month is encouraging and suggests good initial acceptability.

The satisfaction rates showed a notable increase from 68.5% at one month to 77.8% at six months. This improvement over time is a crucial finding, indicating that user satisfaction tends to increase as women adjust to the method. It aligns with other studies showing high long-term satisfaction rates with LNG-IUS [16].

## V. Conclusions

The LNG-IUS presents a promising option for addressing the contraceptive needs of women in Bangladesh. Its high efficacy, long-acting nature, and additional health benefits make it an attractive choice for many users. This study demonstrates that LNG-IUS is a feasible and increasingly acceptable contraceptive option for women in Bangladesh. The high insertion success rate and rising satisfaction levels from one to six months post-insertion are encouraging. Women's primary motivations for choosing LNG-IUS - long-lasting contraception and menstrual bleeding management - highlight the method's dual benefits in this population. While initial results are promising, longer-term studies with larger samples are needed to fully assess LNG-IUS's impact and acceptability in the Bangladeshi context. Future efforts should focus on improving access, awareness, and support for users, particularly in managing initial side effects. the integration of the LNG-IUS into the national family planning program could play a crucial role in meeting unmet contraceptive needs and contributing to overall development goals.

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