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Original Article

Knowledge, Attitude, and Usage of Hyoscine N-Butylbromide in the Management of Labor Among Medical Practitioners in Nigeria

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ABSTRACT

Background: Hyoscine N-butylbromide (HBB; Buscopan) is commonly used in obstetric practice to accelerate labor and facilitate cervical dilation, yet variability in knowledge, attitude, and clinical usage persists among practitioners. This study assessed the knowledge, attitude, and usage patterns of HBB among medical practitioners at Abia State University Teaching Hospital (ABSUTH), Aba, Nigeria.

Methods: A descriptive cross-sectional survey was conducted between August 2024 and April 2025 among 102 medical practitioners directly involved in labor care at ABSUTH. A structured, self-administered questionnaire, validated through expert review and pilot testing (Cronbach's $\alpha = 0.78$), was used to collect data on demographics, knowledge, attitude, and usage patterns. Descriptive and inferential statistics, including Chi-square tests and Pearson correlations, were performed using SPSS v. 25.0. Significance was set at $p < 0.05$.

Results: Among 102 respondents, 93.1% had heard of HBB, and 70.6% correctly identified it as an antispasmodic. While 69.6% recognized its primary mechanism as cervical relaxation, 48% were aware of contraindications. The majority agreed that it is effective (mean = 4.12) and improves maternal outcomes (mean = 4.01). About 85.3% had administered it during labor, mostly in the active phase (64.7%), with the intravenous route being most preferred (56.9%). Statistically significant associations were observed between knowledge and attitude ($\chi^2 = 18.442$, $p = 0.001$), specialty and frequency of use ($\chi^2 = 12.695$, $p = 0.048$), and formal training with dosage knowledge ($\chi^2 = 15.210$, $p = 0.002$). Knowledge, attitude, and usage scores were significantly correlated ($p < 0.01$).

Conclusions: While the majority of practitioners at ABSUTH are familiar with and frequently use HBB in labor management, knowledge gaps and variations in practice remain. Strengthening formal training and incorporating standardized protocols could improve evidence-based usage and maternal outcomes.

Key words: Hyoscine N-butylbromide, Buscopan, labor management, medical practitioners, knowledge-attitude-practice, obstetric care

INTRODUCTION

Hyoscine N-butylbromide (HBB), also known as scopolamine butylbromide and widely marketed as Buscopan, is a quaternary anticholinergic agent used to relieve smooth muscle spasms in the gastrointestinal, urogenital, and biliary tracts. Its peripheral action avoids central side effects due to limited penetration of the blood–brain barrier. [1] Although primarily indicated for abdominal cramps and spasms, HBB has gained attention in obstetrics as a uterine spasmolytic, particularly in the active phase of labor to facilitate cervical dilatation and shorten labor duration. [2]

Prolonged labor is a major cause of maternal and neonatal morbidity and mortality, particularly in low-resource settings. Shortening the duration of labor—especially the first stage—can mitigate risks such as postpartum hemorrhage, sepsis, fetal distress, uterine rupture, and stillbirth. [3] Incorporation of pharmacologic agents like HBB in active labor management aims to enhance cervical dilatation rates without the need for invasive interventions like oxytocin augmentation or cesarean delivery. [1]

A randomized placebo-controlled trial in Sagamu, southwestern Nigeria (2018, n = 126) showed that IV HBB (20 mg) significantly reduced the active first stage duration (mean = 324.9 ± 134.6 min) versus placebo (392.7 ± 119.6 min; p = 0.004). Cervical dilatation was accelerated (1.4 ± 0.8 cm/h vs. 1.0 ± 0.5 cm/h) with no adverse maternal or fetal outcomes. [4] A 2020 meta-analysis of nine Randomized Controlled Trial RCTs with 1,448 women reported HBB reduced active labor by approximately 61 minutes (95% CI, −87.7 to −34.4) and shortened second and third stages without increasing cesarean rates, hemorrhage, instrumental delivery, or low Apgar scores. [5] HBB's peripheral anticholinergic action does not significantly impact uterine contractions or cause severe maternal/neonatal adverse effects. Common minor reactions include mild tachycardia, dry mouth, or transient vomiting—but no significant differences in Apgar outcomes or postpartum bleeding have been observed. [3]

Despite strong clinical data, little is known about the knowledge, beliefs, and prescribing behaviors of Nigerian practitioners regarding HBB in labor. Documented KAP studies are absent in Abia State. Similarly, there are inconsistencies in practice despite World Health Organization support and inclusion in local essential medicines lists. [6] Exploring Knowledge, Attitude and Perception (KAP) in a tertiary hospital like Abia State University Teaching Hospital (ABSUTH), Aba, is critical to identifying barriers to optimal labor outcomes and guiding targeted training and policy development. ABSUTH, a major referral center in Southeastern Nigeria, serves patients with varied obstetric risk factors and resource availability. Investigating HBB usage within this context can reveal practitioner-level adherence to evidence-based protocols, institutional policies, or informal attitudes shaping HBB application, and descriptions of availability, training, and supply-chain factors influencing HBB usage. This study assessed the knowledge, attitude, and usage patterns of HBB among medical practitioners at ABSUTH, Aba, Nigeria.

MATERIALS AND METHODS

Study design

This study employed a descriptive cross-sectional survey design to assess the knowledge, attitude, and usage of HBB (also known as Buscopan) in the management of labor among medical practitioners. The study was conducted at ABSUTH, Aba, located in Southeastern Nigeria. The cross-sectional design enabled the researchers to collect data at a single point in time [7] to determine the prevalence and patterns of knowledge, perception, and use of the drug among practitioners involved in maternal healthcare.

Study setting

The research was conducted at ABSUTH, a tertiary healthcare institution situated in Aba, Abia State, Nigeria. ABSUTH serves as a major referral center for obstetric and gynecological cases in the region. The hospital has a robust Department of Obstetrics and Gynecology and a general medical division that includes family medicine, internal medicine, and anesthesiology units, many of which are involved in obstetric care and labor management.

Study population

The target population comprised medical practitioners involved in labor and delivery care at ABSUTH. This included consultants, resident doctors, medical officers, house officers, and other healthcare providers involved in prescribing or administering medications during labor. All participants were required to be actively practicing at the time of data collection and consent to participate.

Inclusion and exclusion criteria

- **Inclusion criteria:**
  - Medical practitioners (consultants, residents, house officers, and medical officers) are directly involved in labor management.
  - Practicing at ABSUTH for at least one year.
  - Willingness to provide informed consent.
- **Exclusion criteria:**
  - Non-clinical staff and practitioners not involved in labor management.
  - Practitioners on leave during the study period.
  - Incomplete or poorly filled questionnaires.

Sample size determination

The sample size was calculated using Yamane's formula for a finite population [8]:

$$n = \frac{N}{1 + N\,(e)^2}$$

Where:

- n = required sample size
- N = estimated total number of eligible medical practitioners at ABSUTH (~120)
- e = margin of error (0.05)

$$n = \frac{120}{1 + 120\,(0.05)^2}$$

$$n = \frac{120}{1 + (120 \times 0.0025)^2}$$

$$n = \frac{120}{1 + 0.3}$$

$$n = \frac{120}{1.3} = 62.3$$

To account for non-responses and incomplete questionnaires, a 10% attrition rate was added, yielding a final sample size of approximately 102 respondents.

Sampling technique

A total population sampling method was initially attempted, targeting all eligible medical practitioners in the hospital. However, due to constraints such as shift patterns, availability, and consent, consecutive sampling was adopted during data collection, ensuring that all consenting eligible respondents available during the study period were included until the sample size was attained.

Data collection instrument

A structured, self-administered questionnaire was developed by the research team after reviewing similar studies and literature on the use of HBB in obstetric practice. The instrument comprised four sections:

1. **Section A:** Socio-demographic data (age, gender, rank, years of practice, specialty, etc.).
2. **Section B:** Knowledge assessment on HBB's pharmacological profile, indications, dosage, side effects, and mechanism of action, etc. Each correct answer was awarded one point, while incorrect or "Don't know" responses received zero points. The total knowledge score was computed by summing the number of correct responses for each participant, with a maximum obtainable score of 10. The overall knowledge score was then categorized into three levels based on predetermined cut-off points:

- **Good Knowledge**: Scores of 8 to 10 (≥80% correct responses)
- **Fair Knowledge**: Scores of 5 to 7 (50%–79% correct responses)
- **Poor Knowledge**: Scores of 0 to 4 (<50% correct responses)

These thresholds were adapted from similar studies assessing drug-related knowledge among healthcare professionals.

3. **Section C:** Attitude towards its use in labor, including perceptions of safety, efficacy, and preference compared to other agents, etc.
4. **Section D:** Practice and usage patterns, including frequency, mode of administration, gestational age at administration, and monitoring practices, etc.

The questionnaire included multiple-choice questions, Likert-scale items, and yes/no options.

Validity and reliability of the instrument

Content validity was established by experts in obstetrics, pharmacology, and research methodology, who reviewed the questionnaire for relevance, clarity, and coverage. Pilot testing was conducted among 10 medical practitioners at a nearby secondary health facility not involved in the main study. Based on feedback, minor modifications were made. The instrument demonstrated good internal consistency with a Cronbach's alpha of 0.78.

Ethical considerations

Written informed consent was obtained from all participants. Participation was voluntary, and confidentiality was maintained by anonymizing responses and storing data securely.

Data collection procedure

Data collection was conducted over 12 weeks from January to April 2025. Trained research assistants administered the questionnaires during morning clinical briefings, departmental meetings, and ward rounds. Respondents completed the questionnaire privately and returned it on the same day or the next available opportunity.

Data management and analysis

Data were manually screened for completeness and consistency before being entered into SPSS, version 25.0 for analysis. Descriptive statistics such as frequencies, percentages, means, and standard deviations were used to summarize demographic data and general patterns of knowledge, attitude, and usage. Inferential statistics, including Chi-square tests and Fisher's exact test, were used to explore associations between socio-demographic variables and knowledge/usage patterns. A knowledge scoring system was developed with a cut-off score to categorize respondents into "good," "fair," or "poor" knowledge. Significance level was set at $p < 0.05$.

RESULTS

The study surveyed 102 medical practitioners. Most respondents were aged 25 to 34 years (33.3%) and predominantly male (57.8%). Over half were married (56.9%), and a majority specialized in obstetrics and gynecology (37.3%). Notably, 89.2% had prior experience managing labor (**Table 1**).

Regarding knowledge, 93.1% had heard of HBB. A large majority correctly identified it as an antispasmodic (70.6%) and recognized cervical relaxation as its primary mechanism (69.6%). Common indications acknowledged included cervical dilation (68.6%) and acceleration of labor (60.8%). However, only 48.0% were aware of contraindications, and knowledge of side effects varied (**Table 2**).

Attitudinal responses revealed generally positive perceptions, with high mean scores for efficacy beliefs ($M = 4.12$, SD = 0.83), improved maternal outcomes ($M = 4.01$, SD = 0.91), and strong support for further training ($M = 4.41$, SD = 0.72). Perceived risk was low ($M = 2.26$, SD = 1.12; **Table 3**).

In terms of practice, 85.3% had administered the drug during labor, most frequently during the active phase (64.7%) and via intravenous route (56.9%). Only 38.2% had received formal training, but 79.4% expressed interest in attending a workshop. Although 52.0% always obtained informed consent, just 43.1% reported the existence of standard facility guidelines (**Table 4**).

Table 1: Socio-demographic data (n = 102).

Variable	Frequency (n)	Percentage (%)
Age		
<25 years	12	11.8
25–34 years	34	33.3
35–44 years	30	29.4
45–54 years	18	17.6
≥55 years	8	7.8
Gender		
Male	59	57.8
Female	41	40.2
Prefer not to say	2	2.0
Marital status		
Single	33	32.4
Married	58	56.9
Divorced/separated	6	5.9
Widowed	5	4.9
Specialty		
Obstetrics and Gynecology	38	37.3
General Medicine	21	20.6
Family Medicine	14	13.7
Pediatrics	17	16.7
Others	12	11.8
Years of medical practice		
<5 years	21	20.6
5–10 years	40	39.2
11–15 years	25	24.5
>15 years	16	15.7
Professional rank		
House Officer	13	12.7
Medical Officer	24	23.5
Registrar	30	29.4
Senior Registrar	21	20.6
Consultant	14	13.7
Have you ever been involved in labor management?		
Yes	91	89.2
No	11	10.8

Table 2: Knowledge of hyoscine N-butylbromide.

Variable	Frequency (n)	Percentage (%)
Heard of hyoscine N-butylbromide?		
Yes	95	93.1
No	7	6.9
Drug class of hyoscine N-butylbromide		
Analgesic	8	7.8
Antispasmodic	72	70.6
Oxytocic	11	10.8
Tocolytic	4	3.9
Don't know	7	6.9
Primary mechanism of action		
Uterine contraction	5	4.9
Cervical relaxation (anticholinergic)	71	69.6
Pain relief	10	9.8
Induction of labor	9	8.8
Don't know	7	6.9
Indications for use (multiple responses)		
Acceleration of labor	62	60.8
Cervical dilation enhancement	70	68.6
Pain relief	44	43.1
None	3	2.9
Don't know	10	9.8
Recommended dosage		
10 mg IM/IV stat	74	72.5
20 mg IM hourly	8	7.8
5 mg orally	6	5.9
Don't know	14	13.7
Aware of contraindications?		
Yes	49	48.0
No	53	52.0
Known side effects (multiple responses)		
Dry mouth	66	64.7
Blurred vision	59	57.8
Tachycardia	41	40.2
Hypotension	28	27.5
Don't know	20	19.6

Table 3: Attitude towards usage of hyoscine N-butylbromide.

Statement	Mean	SD
I believe Hyoscine N-butylbromide is effective in labor.	4.12	0.83
I feel confident using it in clinical practice.	3.95	0.97
It improves maternal outcomes.	4.01	0.91
I would recommend it to colleagues.	3.88	1.04
Risks outweigh the benefits.	2.26	1.12
I support more training on its use.	4.41	0.72

Likert-scale items: 1 – Strongly Disagree, 2 – Disagree, 3 – Neutral, 4 – Agree, 5 – Strongly Agree.

Statistically, knowledge was positively correlated with attitude (r = 0.641, p < 0.01) and practice (r = 0.598, p < 0.01). Attitude also correlated significantly with practice (r = 0.664, p < 0.01; **Table 5**).

Chi-square tests revealed significant associations between knowledge and attitude (χ^2 = 18.442, p = 0.001), specialty and frequency of administration (χ^2 = 12.695, p = 0.048), formal training and dosage knowledge (χ^2 = 15.210, p = 0.002),

Table 4: Practice and usage pattern of hyoscine N-butylbromide.

Variable	Frequency (*n*)	Percentage (%)
Ever administered to a woman in labor?		
Yes	87	85.3
No	15	14.7
Frequency of use		
Very often	19	18.6
Often	27	26.5
Sometimes	31	30.4
Rarely	16	15.7
Never	9	8.8
Stage of labor for administration		
Latent phase	15	14.7
Active phase	66	64.7
Second stage	14	13.7
Don't know	7	6.9
Preferred route		
Intramuscular	32	31.4
Intravenous	58	56.9
Oral	8	7.8
Don't know	4	3.9
Observed adverse effects		
Yes	26	25.5
No	76	74.5
Obtain informed consent?		
Always	53	52.0
Sometimes	27	26.5
Rarely	13	12.7
Never	9	8.8
Standard guidelines at the facility?		
Yes	44	43.1
No	38	37.3
Not sure	20	19.6
Part of evidence-based practice?		
Yes	61	59.8
No	18	17.6
Not sure	23	22.5
Received formal training?		
Yes	39	38.2
No	63	61.8
Interested in the workshop?		
Yes	81	79.4
No	21	20.6

Table 5: Correlation matrix (Pearson's *r*).

Variables	Knowledge	Attitude	Practice
Knowledge Score	1.000	0.641**	0.598**
Attitude Score	0.641**	1.000	0.664**
Practice (usage) Score	0.598**	0.664**	1.000

**$p < 0.01$ (2-tailed) indicates statistical significance.

and rank and confidence in use ($\chi^2 = 10.527$, $p = 0.032$; **Table 6**).

DISCUSSION

The socio-demographic profile of participants in this study revealed a balanced distribution across age groups, with the largest cohort between 25 to 34 years (33.3%) and a majority of male practitioners (57.8%). Most respondents were married (56.9%), predominantly specializing in Obstetrics and Gynecology (37.3%), and possessed moderate experience, with 39.2% having 5 to 10 years of practice. Notably, nearly 90% reported direct involvement in labor management. This profile is consistent with similar Nigerian-based clinical studies where active labor management involved mid-career clinicians working in tertiary settings. [9]

Awareness of HBB was widespread (93.1%), with most correctly classifying it as an antispasmodic (70.6%) and understanding its primary mechanism as cervical relaxation (69.6%). Knowledge regarding indications such as cervical dilation and acceleration of labor was also high. A majority recognized recommended dosing (72.5% identified 10 mg IM/IV) and were aware of common side effects like dry mouth and blurred vision (64.7% and 57.8%, respectively). However, only 48% were aware of contraindications. These findings align with earlier Nigerian research where clinicians demonstrated proficient drug knowledge yet showed gaps in awareness of contraindications and side effects. [9]

Attitudinally, respondents expressed strong confidence in HBB's efficacy (mean = 4.12/5) and its positive impact on maternal outcomes (4.01), with a clear interest in additional training (4.41). They generally disagreed with the assertion that risks outweigh benefits (mean = 2.26). These positive attitudes echo findings in a systematic review by Mohaghegh et al., which emphasized clinician confidence but also highlighted inconsistencies across different health systems regarding its use. [1]

In clinical practice, a substantial majority (85.3%) had administered HBB in labor. It was most commonly used during the active phase (64.7%), primarily via the intravenous route (56.9%). About a quarter (25.5%) reported experiencing observed adverse effects. Informed consent was obtained routinely by over half of these practitioners (52%). Comparatively, literature from Egypt and Nigeria reports similar administration patterns and tolerable side effect profiles, although adherence to structured informed consent processes varies across settings. [9,10]

Formal training in HBB usage was reported by only 38.2% of practitioners, though a striking 79.4% expressed interest in workshops. This suggests a strong readiness for continuing medical education—a need corroborated by a recent Cochrane review underscoring the importance of standardized training protocols to optimize antispasmodic use in labor. [11]

The correlation matrix revealed significant positive associations between knowledge, attitude, and practice (Pearson's r ranging from 0.598 to 0.664, $p < 0.01$). These align with educational theories in clinical practice, which posit that enhanced knowledge fosters favorable attitudes and higher implementation rates. [12]

Table 6: Chi-square analysis (cross-tabulations).

Variable pair	Chi-square (χ^2)	df	*p*-value	Interpretation
Gender × Practice of Use	5.183	2	0.075	Not significant
Knowledge × Attitude	18.442	4	0.001**	Significant relationship
Specialty × Frequency of Administration	12.695	6	0.048*	Significant
Formal Training × Dosage Knowledge	15.210	3	0.002**	Significant
Professional Rank × Confidence in Use (Likert)	10.527	4	0.032*	Significant

*$p < 0.05$ = *significant*, **$p < 0.01$ = very significant.

Chi-square analysis further demonstrated that specialty, formal training, and professional rank significantly influence HBB usage patterns. Notably, practitioners with formal training were more knowledgeable of dosing regimens, and senior clinicians displayed greater confidence in administering HBB. Similar associations between specialized training and drug use confidence have been reported in other Nigerian centers. [9,13]

When comparing these findings to randomized clinical trials and meta-analyses, there is strong evidence supporting HBB's efficacy in shortening labor. For instance, a randomized study in Sagamu, Nigeria, showed a statistically significant reduction in the first stage of labor (mean 324.9 minutes vs. 392.7 minutes; $p = 0.004$) without harmful maternal or neonatal outcomes. [4] A meta-analysis of 20 randomized trials found that HBB reduced first-stage labor duration in both primigravida (MD = −57.7 minutes) and multigravida (MD = −90.7 minutes), with minor reductions in the second stage. [1]

However, conflicting evidence exists. The recent BUSCopan in LABor (BUSCLAB) trial found that a single 20 mg intravenous dose of HBB did not significantly shorten labor in nulliparous women with slow labor progression and reported only mild adverse effects. [10] Additionally, Barau et al. in Abuja reported no significant difference in the duration of active labor between the HBB and placebo groups, highlighting heterogeneity in outcomes across clinical settings. [14] These conflicting findings suggest that context-specific variables such as dosing protocols, timing, parity, and the nature of labor (spontaneous versus slow progression) play a critical role in HBB's effectiveness. This highlights the potential value of tailored clinical training and clear institutional guidelines within facilities like ABSUTH.

LIMITATIONS OF THE STUDY

One notable limitation of this study is the use of consecutive sampling, which may introduce potential selection bias. This method, although practical and commonly used in clinical settings, does not ensure true randomization. In a hospital environment with varied shifts, departments, and specialties, some eligible participants may have been systematically excluded based on timing or availability. As a result, the sample may not fully represent the broader target population, potentially affecting the generalizability of the findings.

CONCLUSIONS

The findings of this current study showed that practitioners in Abia State display commendable awareness, positive attitudes, and active use of HBB in labor, which align with global literature supporting its efficacy. However, observed training deficits and modest adverse events necessitate structured educational interventions. The body of evidence supports HBB's role in reducing labor duration, especially during the active phase, but also calls for standardized administration protocols and more randomized trials in Nigerian settings to optimize outcomes and ensure best practice adherence.

AUTHORS' CONTRIBUTION

Each author has made a substantial contribution to the present work in one or more areas, including conception, study design, conduct, data collection, analysis, and interpretation. All authors have given final approval of the version to be published, agreed on the journal to which the article has been submitted, and agree to be accountable for all aspects of the work.

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CONFLICT OF INTEREST

None.

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