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Benefits of Artificial Labor Induction Agents: A Survey among Healthcare Professionals

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Abstract:

- ***Introduction***

Artificial labor induction is increasingly common globally and in Morocco. However, disparities persist in the methods used and the training of professionals. Prostaglandins, particularly misoprostol and dinoprostone, are widely utilized, but their use raises concerns regarding effectiveness, safety, and pharmacovigilance.

- ***Objectives:***

This study aims to evaluate the practices of healthcare professionals in the Rabat region, Morocco, regarding artificial labor induction, identify preferences for the agents used, and analyze their knowledge. It also seeks to optimize the use of artificial induction agents while ensuring effective and appropriate hospital management.

- ***Materials and Methods:***

This is a prospective, descriptive, and analytical study conducted between November 2024 and January 2025 among gynecologists in the Rabat region. An exhaustive sampling included practitioners from both public and private sectors, as well as specialists in training. Data were collected using a validated questionnaire and analyzed with Microsoft Excel 2019.

- ***Results:***

The study revealed that 92% of practitioners regularly use prostaglandins for labor induction. Among them, 56% prefer dinoprostone due to its safety profile, while misoprostol is favored for its effectiveness and cost. However, 72% of respondents had no specific training on these agents, and 76% do not systematically report adverse effects. These gaps contribute to heterogeneous practices and insufficient pharmacovigilance.

A notable paradox was identified: although misoprostol is considered more effective, its use is associated with a higher risk of adverse effects, such as uterine hypertonia and fetal distress.

- ***Conclusion:***

This study confirms the importance of adequate and continuous training for healthcare professionals on the use of artificial labor induction agents. The implementation of harmonized national protocols could reduce regional disparities, improve clinical practices, and enhance pharmacovigilance. Integrating these strategies into training programs and obstetric care pathways is crucial to optimizing maternal-fetal outcomes while ensuring maximum safety.

Keywords*: Artificial Labor Induction, Prostaglandins, Misoprostol, Dinoprostone, Labor Induction Methods.*

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I. INTRODUCTION

Artificial labor induction is an increasingly common practice worldwide. According to the 2021 National Perinatal Survey, 25.8% of births in France were preceded by labor induction, reflecting a rise from 22% in 2016. The primary indications for induction include post-term pregnancies exceeding 41 weeks, premature rupture of membranes, poorly controlled gestational diabetes, and certain maternal or fetal complications. This trend underscores both medical

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advancements aimed at preventing obstetric complications and improved management of high-risk pregnancies. (1,2)

Similar trends are observed in other countries. In the United States, approximately 31.4% of deliveries were induced in 2020, according to data from the Centers for Disease Control and Prevention (CDC). This figure has steadily increased over the past two decades due to both medical and elective reasons. In Canada, national estimates indicate induction rates ranging from 25% to 28%, with provincial variations reported by the Canadian Perinatal Surveillance System.(3,4)

In Morocco, while precise national data remains limited, an increasing reliance on labor induction is evident. Findings from our study confirm that 92% of surveyed obstetricians regularly use pharmacological agents for labor induction Figure1. The primary medications employed, mainly prostaglandins, are used in response to medical indications such as post-term pregnancy, premature rupture of membranes, and specific maternal-fetal complications. These trends reflect the evolving obstetric practices in Morocco, driven by medical advancements, improved hospital infrastructure, and enhanced awareness among healthcare professionals regarding the benefits of labor induction in appropriate clinical situations Figure2.

II. MATERIALS AND METHODS

A cross-sectional descriptive study was conducted over a period of two months among healthcare professionals in the Rabat region. The study aimed to assess current practices related to labor induction, identify practitioners' preferences regarding induction agents, and evaluate their knowledge of these agents. Additionally, the objective was to optimize the use of artificial labor inducers while ensuring efficient and well-adapted hospital management.

The study was conducted anonymously, ensuring the confidentiality of participants' responses. The surveyed population consisted primarily of men, representing 68% (n=34), compared to 32% (n=16) women, with a male-to-female ratio of 2.13. Among the participants, 58% (n=29) were gynecologists, while 42% (n=21) were medical trainees, including residents and interns.

Regarding professional experience, 44% (n=22) of respondents had practiced gynecology for more than 10 years, 20% (n=10) had between 5 and 10 years of experience, and 36% (n=18) had less than 5 years of experience. Concerning their sector of practice, 72% (n=36) worked in the public sector, mainly in university hospital maternity wards (CHU, HMIMV), while 28% (n=14) were in the private sector (clinics and private practices). Among the public sector gynecologists, those working in maternity services, such as Soussi and Orangers, represented 46% (n=23) of respondents.

The overall sample included 50 gynecologists and medical trainees working in gynecology departments.

III. RESULTS AND DISSCUSSION

A. Availability and Indications of Prostaglandins

Prostaglandins are increasingly favored for labor induction by healthcare professionals worldwide due to their efficacy and safety. This trend is evident in Morocco, where their usage is steadily rising.

In France, prostaglandins such as dinoprostone and misoprostol are recommended by the Haute Autorité de Santé (HAS) for managing post-term pregnancies and specific obstetric indications, with strict monitoring protocols in place. Their widespread use in French hospitals underscores their effectiveness in initiating labor. **(5)**

Our study confirms the growing use of prostaglandins in Moroccan hospitals, particularly in university and public maternity hospitals. According to our survey, 72% of participants reported using dinoprostone, while 28% preferred misoprostol **Figure 3.**

However, medication availability varies across healthcare facilities. Approximately 44% of respondents indicated that dinoprostone had been available in their institution for 1 to 3 years, while 36% reported misoprostol availability for over three years.

Regarding indications, our study revealed that misoprostol is primarily used for postpartum hemorrhage (56%), labor induction (40%), and miscarriage management (32%). Conversely, dinoprostone is predominantly utilized for labor induction (88%) **Figure 2.**

These findings align with international studies, such as the 2019 study by Thompson et al. in the United States, which reported similar usage trends. **(6)**

B. Efficiency and Safety Considerations

- *Training on Induction Agents :*

A significant gap in training was identified in our study, as 72% of respondents reported not receiving formal education on dinoprostone and misoprostol use. Additionally, while 56% of participants were aware of dinoprostone storage requirements, only 36% correctly identified the exact conditions. These findings highlight the need for enhanced training programs to ensure optimal drug utilization.

- *Comparative Efficiency of Misoprostol and Dinoprostone :*

Our study found that 86% of participants considered misoprostol effective for labor induction, compared to 56% for dinoprostone. These results are consistent with the findings of Silfeler et al. (2011), which demonstrated a higher vaginal delivery rate within 12 hours for misoprostol (48.5%) compared to dinoprostone (13.3%). Similarly, Maggi et al. (2019) reported superior outcomes with misoprostol, including a higher vaginal delivery rate (88% vs. 74%, $P < 0.007$) and significantly reduced time to labor onset and delivery**. (7)**

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Further supporting this, Denguezli et al. found that misoprostol led to a significantly higher proportion of vaginal deliveries within 24 hours (75%) compared to dinoprostone (53.8%, RR = 1.40, P = 0.02). Sanchez et al. also noted a shorter median time from induction to vaginal delivery with misoprostol (698 minutes) compared to dinoprostone (1041 minutes,P <0.001)**(8).**

➢ *Impact on Hospitalization Duration:*

When surveyed, 56% of healthcare professionals indicated no notable difference in hospitalization duration between dinoprostone and misoprostol users. However, 30% believed dinoprostone shortened hospital stays, while 14% favored misoprostol. The study by Sire F. et al. found a statistically significant difference, with maternal hospitalization lasting 4.13 days for dinoprostone users versus 4.35 days for misoprostol users (P = 0.006), suggesting a slight advantage for dinoprostone**(9).**

➢ *Adverse Effects :*

Our study revealed notable differences in adverse effects between the two drugs. Misoprostol was associated with a higher incidence of complications, including uterine rupture (27%), hyperstimulation (24%), fetal distress (21%), and vomiting (7%), compared to dinoprostone, which was primarily linked to hyperstimulation and fetal distress (10%).

These findings align with previous research. Denguezli et al. reported slightly higher rates of tachysystole (6.1% vs. 4.6%) and uterine hyperstimulation syndrome (7.6% vs. 4.6%) with misoprostol, though statistical significance was not reached. Similarly, Sanchez et al. observed a significantly higher incidence of tachysystole with misoprostol (21.3%) compared to dinoprostone**(8).**

➢ *Notification of Adverse Effects to Health Authorities:*

The results of our study show that a significant majority of healthcare professionals, 76%, have never reported adverse effects of labor-inducing agents, such as misoprostol and dinoprostone, to the relevant health authorities. In contrast, only 24% stated that they had made such notifications.

This situation highlights a lack of awareness and systematic practices in reporting adverse effects. It is crucial to increase awareness among healthcare professionals, encouraging them to report any adverse reactions to ensure rigorous drug monitoring, improve patient safety, and inform health authorities of potential risks.

C. Perceptions and Preferences

According to our study, the results show a preference for dinoprostone in labor induction. Specifically, 56% of participants (n=28) preferred dinoprostone, while 36% (n=18) indicated a preference for misoprostol **(Figure 4).** The analysis of factors influencing these choices reveals distinct priorities: misoprostol is mainly chosen for its affordability (27%) and perceived effectiveness (24%), whereas dinoprostone is favored for its safety profile, including fewer adverse effects (29%) and better maternal safety (20%) **Figure 5.**

These findings indicate that while misoprostol is often recognized for its efficacy, concerns about safety and adverse effects explain why dinoprostone remains the preferred choice for most clinicians in our study. This choice reflects the importance of balancing effectiveness and safety in clinical decision-making.

D. Cost of Induction:

The cost of labor induction is a key factor in choosing the appropriate agent. Our study found that 21% of participants cited affordability as a reason for choosing misoprostol, compared to only 6% for dinoprostone. This highlights the significant impact of economic considerations on clinical decision-making.

Currently, although dinoprostone has market authorization (AMM) in Morocco, it is not covered by insurance providers or the Mandatory Health Insurance (AMO). Including dinoprostone in the list of reimbursable medications would be beneficial, given its efficacy and frequent use in obstetrics.

These results indicate that while factors such as safety and tolerance may influence the preference for dinoprostone, the significantly lower cost of misoprostol remains a major advantage, especially in resource-limited settings. This favorable cost-effectiveness ratio reinforces misoprostol's position as a preferred option for labor induction.

IV. CONCLUSION

The increasing use of labor induction globally, including in Morocco, underscores its importance in modern obstetric practice. Prostaglandins, particularly misoprostol and dinoprostone, play a crucial role in this process. However, their use must be guided by evidence-based protocols to optimize efficacy and safety.

Our study highlights the superior effectiveness of misoprostol in inducing labor, though it carries a higher risk of adverse effects compared to dinoprostone. Additionally, discrepancies in training and knowledge among healthcare providers suggest an urgent need for improved education and standardized national guidelines to ensure safe and effective labor induction practices in Morocco.

REFERENCES

[1]. National Perinatal Survey 2021 [Internet]. [cited 2025 Jan 25]. Available from: https://www.santepubliquefrance.fr/etudes-et-enquetes/enquete-nationale-perinatale-2021

[2]. National Perinatal Survey 2016. Births and establishments, situation and evolution since 2010 | Directorate for Research, Studies, Evaluation, and Statistics [Internet]. [cited 2025 Jan 25]. Available from: https://drees.solidarites-sante.gouv.fr/publications/rapports/enquete-nationale-perinatale-2016-les-naissances-et-les-etablissements

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25mar817

[3]. Osterman MJK, Hamilton BE, Martin JA, Driscoll AK, Valenzuela CP. Births: final data for 2020. [cited 2025 Jan 25]; Available from: https://stacks.cdc.gov/view/cdc/112078
[4]. Public Health Agency of Canada. Perinatal health indicators in Canada 2017 [Internet]. 2017 [cited 2025 Jan 25]. Available from: https://www.canada.ca/fr/sante-publique/services/prevention-blessures/division-surveillance-sante-epidemiologie/sante-maternelle-infantile/indicateurs-sante-perinatale-2017.html
[5]. Haute Autorité de Santé - Professional best practice recommendations for the social and medico-social sector [Internet]. [cited 2025 Jan 25]. Available from: https://www.has-sante.fr/jcms/p_3229902/fr/recommandations-de-bonnes-pratiques-professionnelles-pour-le-secteur-social-et-medico-social
[6]. Thompson R, Miller A, Patel S, et al. Comparison of prostaglandins in labor induction: A retrospective study. J Obstet Gynecol. 2019.
[7]. Silfeler DB, Tandogan B, Ayvaci H, Silfeler I, Yenidede I, Dayicioglu V. A comparison of misoprostol, controlled-release dinoprostone vaginal insert and oxytocin for cervical ripening. Arch Gynecol Obstet. Dec 2011;284(6):1331-7.
[8]. Denguezli W, Trimech A, Haddad A, Hajjaji A, Saidani Z, Faleh R, et al. Efficacy and safety of six-hourly vaginal misoprostol versus intracervical dinoprostone: a randomized controlled trial. Arch Gynecol Obstet. Aug 1, 2007;276(2):119-24.
[9]. Sire F, Ponthier L, Eyraud JL, Catalan C, Aubard Y, Coste Mazeau P. Comparative study of dinoprostone and misoprostol for induction of labor in patients with premature rupture of membranes after 35 weeks. Sci Rep. Sep 2, 2022;12(1):14996.

FIGURES

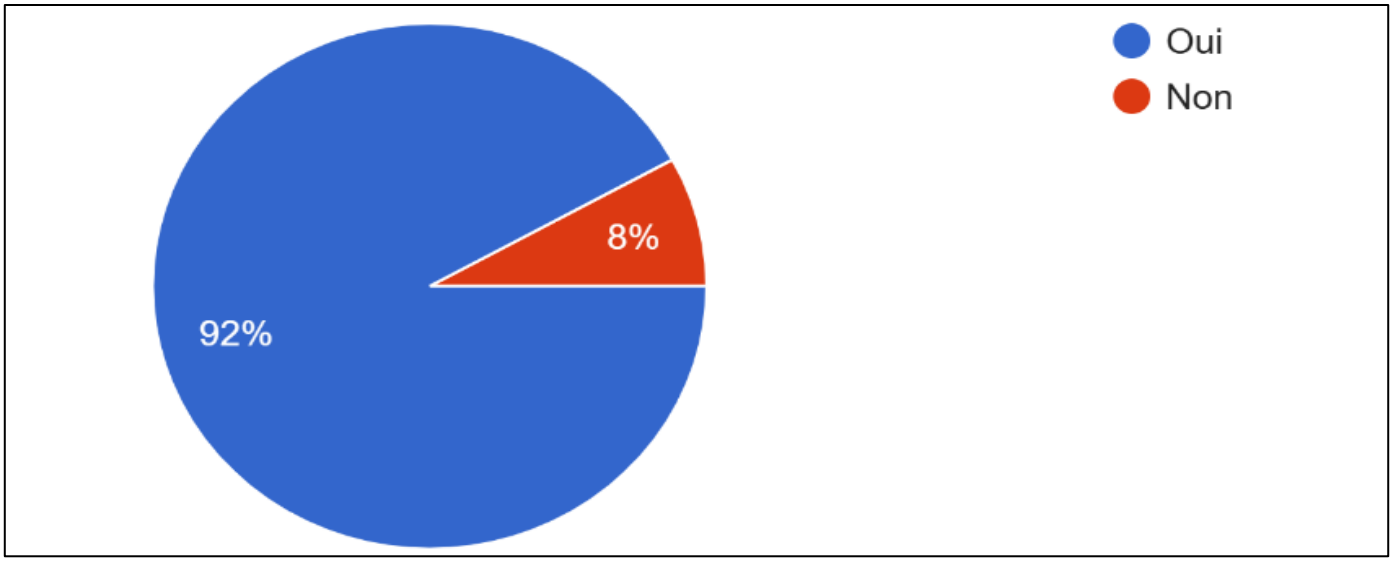

Fig 1: Rate of Medication Use in Labor Induction According to Participants

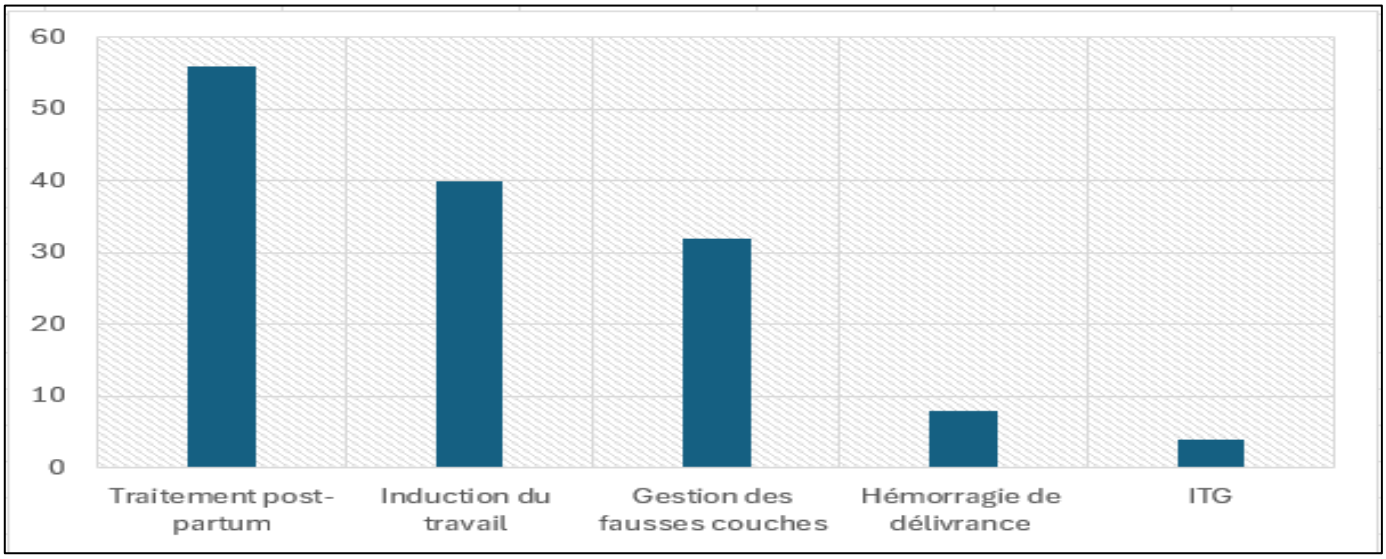

Fig 2(a) : Indications for the use of Misoprostol according to the Participants

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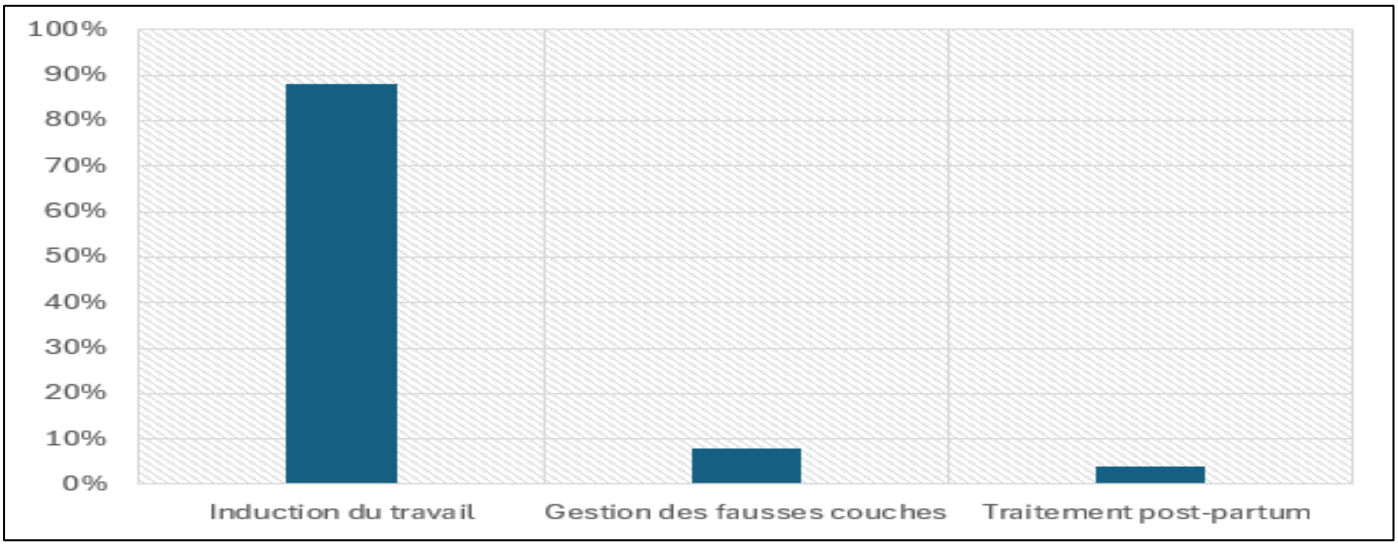

Fig 2b: Indications for the use of Dinoprostone According to the Participants

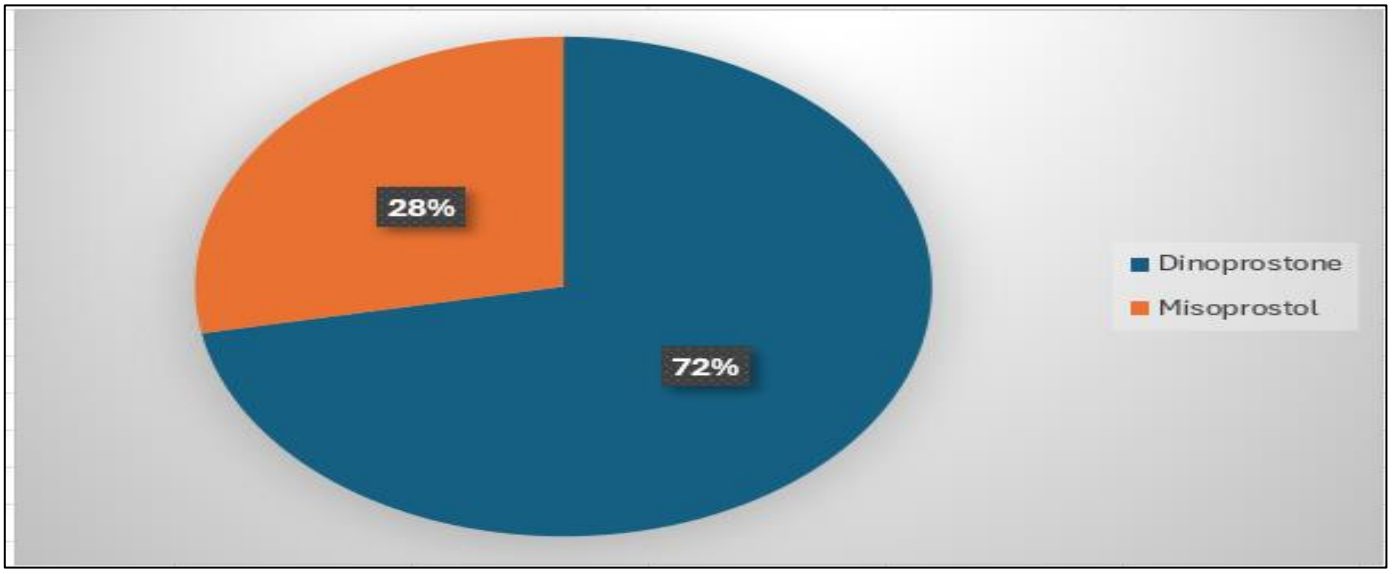

Fig 3: Medications used by Participants for the Induction of Labor

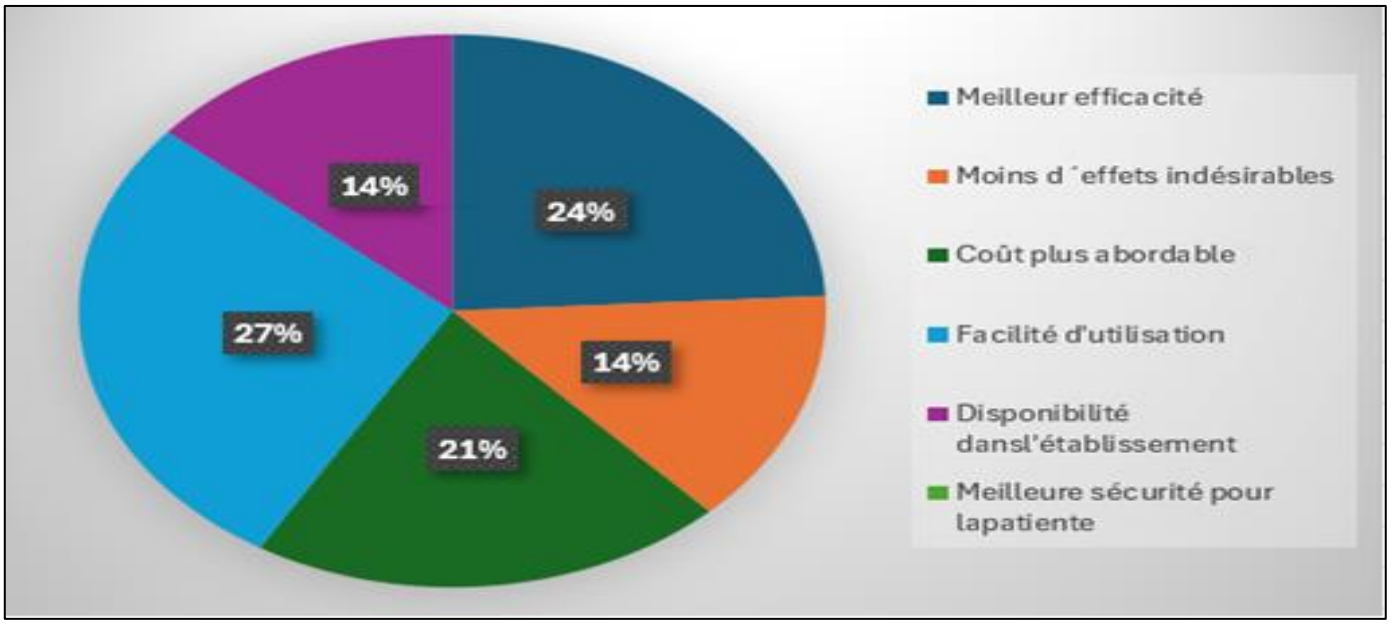

Fig 4: Factors Influencing the Choice of Misoprostol for Labor Induction according to the Participants

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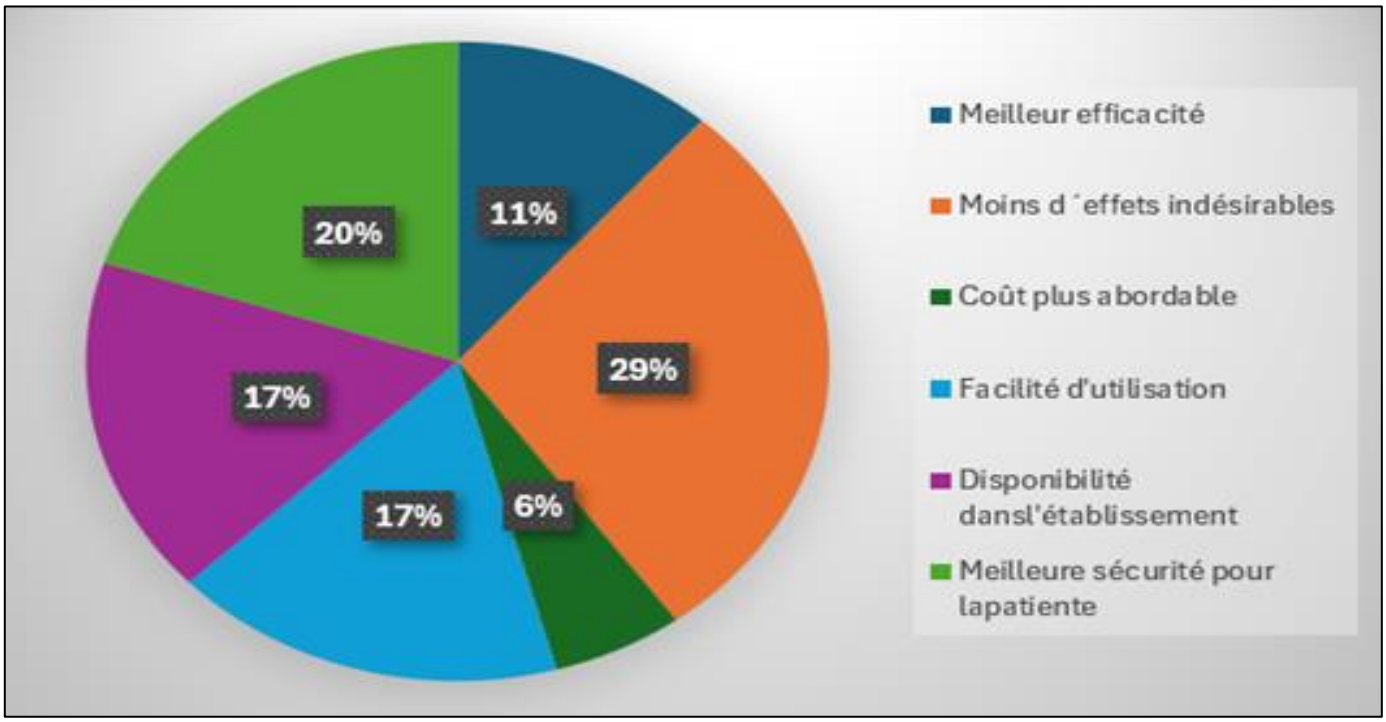

Fig 5: Factors Influencing the Choice of Dinoprostone for Labor Induction According to the Participants.