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Knowledge, Attitudes, and Practices of Health Professionals Regarding Caesarean Section in the Territories of Beni and Lubero

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Abstract

Introduction: The sustained increase in cesarean section rates has become a significant concern for maternal and neonatal health. The decision to perform a cesarean section is not based solely on medical criteria; it is also influenced by other factors related to healthcare professionals. The objective of this study was to assess healthcare professionals' knowledge, attitudes, and practices regarding cesarean section. **Methods**: A cross-sectional, analytical, multicenter study was conducted among 402 healthcare professionals (161 nurses, 132 midwives, 109 general practitioners). These participants worked in health facilities providing a complementary package of activities across eight health zones in the territories of Beni and Lubero. Study data were collected using Kobocollect and analyzed with SPSS 29.0. **Results**: The level of knowledge about caesarean section was considered sufficient among 60 healthcare professionals, representing 14.93% of the sample. In addition, 119 healthcare professionals (29.60%) exhibited appropriate attitudes and practices regarding caesarean section. The absence of training in emergency obstetric and neonatal care increased the risk of having insufficient knowledge, an inappropriate attitude, and inappropriate practice toward caesarean section by factors of 13, 6, and 5, respectively. **Conclusions:** Healthcare professionals' knowledge of caesarean section was limited, with inappropriate attitudes and practices. Continuing professional development for healthcare workers in emergency obstetric and neonatal care will improve their competencies, thereby ensuring effective communication about caesarean section during antenatal and postnatal consultations.

Keywords

Knowledge, Practices, Caesarean Section, Healthcare Professionals, Democratic Republic of the Congo

1. Introduction

Cesarean section is the most frequently performed surgical procedure in obstetrics. It represents an alternative to vaginal delivery when the latter is contraindicated or when there is a confirmed or potential risk to maternal and/or fetal health [1] [2].

In low-resource countries, the gradual increase in caesarean section rates is becoming a concern because its impact on maternal and neonatal health is not apparent [3]. Available data show that maternal mortality after caesarean delivery remains high. It is estimated at 5.43 per 1000 procedures performed [4]. Delays in surgical decision-making, shortages of qualified staff, inadequate medico-technical equipment, and the absence or limited implementation of standardized management protocols are among the main factors involved in rising caesarean rates [5]. According to Chaillet, interventions aimed at critically analyzing and adapting professional health-care practices constitute a strategy to curb this caesarean epidemic [6]. Within this paradigm, health-care professionals play a key role. Over the years, a growing consensus has emerged among researchers and clinicians that health-care professionals' attitudes, beliefs, and perceptions play a decisive role in the decision to perform a caesarean section [7]. This decision is not based solely on objective medical criteria; it is also influenced by the subjective interpretation of obstetric indications, the perceived maternal and fetal risks, and practitioners' experience and clinical habits [8]. This phenomenon is particularly pronounced in settings where standardized clinical best-practice protocols are absent, incomplete, or poorly implemented. This situation leaves substantial room for individual judgment and variability in practice [9]. An increase in planned caesarean sections has also been observed among health-care professionals who prefer caesarean delivery over vaginal birth [10]. The mistaken belief that vaginal delivery may traumatize a woman's pelvic floor muscles, leading to stress urinary incontinence and pelvic organ prolapse after childbirth, was the argument put forward by these health-care professionals [10]. Moreover, several individual characteristics of health-care professionals significantly influence their attitudes and clinical practices in obstetrics. Professional experience plays a major role. Studies have shown that the number of years in practice is associated with improved clinical performance. It likely leads to better decision-making in the management of cases related to emergency obstetric and neonatal care (EmONC) [11]. Personal factors such as age and sex may also modulate clinicians' attitudes; these variables often shape risk perception, empathy, and priorities in the management

of patients [12].

In sub-Saharan Africa, few studies have concurrently examined health professionals' knowledge, attitudes, and practices regarding caesarean section, as well as the factors likely to influence these dimensions. We conducted this study to address this negative gap. We placed particular emphasis on rural settings, where access to education is limited and caesarean section rates are steadily increasing despite the fragility of EmONC services [13]. The lack of such data hampers health systems' ability to design and implement targeted interventions to improve caesarean section practice, a component of EmONC.

2. Materials and Methods

2.1. Study Framework

This study was conducted in eight Rural Health Zones (RHZs) in the Beni and Lubero territories. These two territories are located in North Kivu Province in the Democratic Republic of the Congo. For approximately the past decade, insecurity linked to armed groups has affected both territories. This insecurity has led to large-scale population displacement toward major urban centers considered safer.

2.2. Study Design and Population

This was a multicenter cross-sectional analytical study examining the knowledge, attitudes, and practices (KAP) of healthcare professionals (nurses, midwives, physicians) regarding cesarean section. These healthcare professionals were assigned to the maternity wards of Healthcare Facilities (HCFs) that offered cesarean delivery services within their technical platform. The study was conducted from 1 July 1st to November 30th 2024, over a five-month period in 25 HCFs. These HCFs are distributed across eight RHZs, namely Kyondo, Musienene, Kalunguta, Lubero, Masereka, Vuhovi, Biena, and Manguredjipa.

2.3. Inclusion and Exclusion Criteria

Healthcare professionals assigned to the maternity unit of the targeted ESS were included in this study. The only obstetrician-gynecologist practicing in one of the targeted HCFs was excluded from the study. As a single individual, this participant did not allow for a meaningful statistical analysis or adequate representativeness of this professional category.

2.4. Sampling and Data Collection Technique

Sampling was comprehensive for physicians and midwives, whereas stratified sampling was applied for nurses, who accounted for 50% of the total health workforce. For this stratum, an exhaustive list of all nurses assigned to each facility was compiled, and each individual was assigned a unique number. Participants were then selected by simple random sampling from this list, in accordance with the number of nurses to be included in the study. All healthcare facility performing

cesarean section were included exhaustively, *i.e.*, a total of 25 facilities. Of 427 expected care professionals, 402 completed the questionnaire, yielding an overall response rate of 94%. Participation rates were 93% among physicians (109/117), 97% among midwives (132/136) and 93% among nurses (161/174). A structured 17-item questionnaire was developed by a team of three experts (one in public health and two in obstetrics and gynecology). In developing the instrument, the experts drew on theoretical frameworks relevant to each variable under study. The questionnaire was pre-tested on a sample of 25 health professionals. Following the pre-test, two items related to caesarean section practice were reworded by the expert team to improve clarity and comprehension. After validation, the questionnaire was programmed in KoboCollect. For the knowledge section, questions were primarily single-choice, and the correct answer had to be selected by checking the corresponding box. For the attitude and practice sections, items were measured using a Likert scale [14] with 5 points, except for one specific question. The latter used a 4-point scale to better reflect the available options. Nine interviewers were then trained over two days for data collection. During collection, each interviewer asked the questions and recorded responses in real time. The general characteristics of participants included age, sex, professional qualification (physician, nurse, midwife), years of practice, and EmONC training during professional practice (yes/no). To assess health professionals' knowledge, the questionnaire covered several topics: the implications of caesarean section for future pregnancies [15] (long-term complications), the duration of physical recovery after caesarean section [16] (according to the WHO, the duration is six to eight weeks) and the option of analgesia during labor [17] (preferably nerve block). Health professionals' attitudes toward caesarean section were explored across several themes. These included indications for caesarean section and informing patients about risks and benefits before decision-making. They also addressed the integration of educational programs aimed at promoting vaginal birth after caesarean section when necessary and the influence of social perceptions of caesarean section on the choice of delivery mode. They further concerned about the introduction of an in-depth discussion of delivery mode within antenatal care, as well as consideration of women's preferences and wishes before scheduling a caesarean section. Regarding practice of caesarean section, questions focused on the monthly frequency of performing or assisting with caesarean sections. We predefined the required number corresponding to the Likert scale: Never (0 caesarean sections), rarely (at least two), sometimes (between 2 and 5), often (between 5 and 10), and very often (more than 10). The available human resources in health facilities that perform caesarean section (permanent presence of the anesthetist, the laboratory technician, and the pharmacy officer), as well as access to continuing education on techniques and practices related to caesarean section (availability of protocols and continuing-education schedules).

2.5. Statistical Analyses

The study data were analyzed using SPSS software version 29.0. For the assess-

ment of knowledge, attitudes, and practices, each correct answer received one point and each incorrect answer received zero points. Similarly, for each response option on the Likert scale, we assigned a numerical value ranging from 1 to 5 or from 1 to 4 depending on the item wording. Summing up the points for each item allowed us to obtain the score for the relevant items. For knowledge, attitudes, and practices, the overall score was obtained by averaging the scores of the respective items. A threshold of more than 75% has been used in several scientific studies as a performance cutoff [18] [19]. Thus, the level of knowledge was considered sufficient when healthcare professionals achieved a score ≥ 75% of the maximum. Otherwise, it was classified as insufficient. The same threshold (≥75%) was applied to attitudes and practices. Attitudes and practices regarding caesarean section were considered appropriate when the overall score was ≥75% and inappropriate when the threshold was <75%. Relative and absolute frequencies were calculated for qualitative variables. The median and extremes were calculated for age. A bivariate analysis was performed to examine associations between the level of knowledge, attitudes, and practices and the independent variables one by one. Crude odds ratios with 95% confidence intervals and a p-value threshold of 0.05 were calculated. All variables showing a significant association in the bivariate analysis were entered into the binary multiple logistic regression model. Variables with $p < 0.05$ were considered determinants of providers' level of knowledge, attitudes, and practices regarding caesarean section. For each retained independent variable, we calculated the adjusted odds ratio (aOR) with its 95% confidence interval and the p-value at the significance level (<0.05).

2.6. Ethical Considerations

The protocol for the present study received a favorable opinion following review by the Ethics Committee of the University of Goma under N˚UNIGOM/CEM/006/2022, valid from 05 January 2022 to 05 January 2025. Confidentiality was ensured, and data were collected anonymously.

3. Results

3.1. General Characteristics of the Respondents

The median age was 32 years, with values ranging from 20 to 65 years.

Table 1. General characteristics of the respondents.

Variables	Sample size (n = 402)	Percentage
Age groups (years)		
≥25	64	15.92
26 - 35	292	72.64
36 - 45	39	9.70
>45	7	1.74

Continued

Sex		
Feminine	219	54.48
Masculine	183	45.52
Qualification of service providers		
Nurse	161	40.05
Midwife	132	32.84
Physician	109	27.12
Experiment (year)		
<5	120	29.85
5 - 10	140	34.83
11 - 15	61	15.17
≥16 years old	81	20.15
Training in BEmONC		
No	282	70.15
Yes	120	29.85

Table 1 shows that the majority of respondents were aged 26 - 35 years (72.64%) and female (54.48%). Among respondents, 32.84% worked as midwives, and 70.15% (n = 282) had never participated in EmONC training.

3.2. Knowledge, Attitudes, and Practices of Healthcare Professionals Regarding Caesarean Section

Table 2. Respondents' knowledge of Caesarean section. For the overall recovery time after a cesarean section, intervals are defined with the upper limit excluded.

Variables	Sample (N = 402)	Percentage (%)
Overall recovery time after a cesarean section		
Less than four weeks	23	5.72
4 - 6 weeks	28	6.97
6 - 8 weeks	116	28.86
8 - 10 weeks	85	21.14
Less than or equal to 10 weeks	81	20.15
I do not know	69	17.16
Implications of cesarean delivery for future pregnancies		
Increased risk of placental complications		
No	371	92.29
Yes	31	7.71
Increased risk of uterine rupture		
No	325	80.85
Yes	77	19.15

Continued

Pharmacological analgesia during labor		
Intravenous analgesics		
No	191	47.51
Yes	211	52.49
Oral analgesics		
No	240	59.70
Yes	162	40.30
Analgesics administered via nerve blocks		
No	389	96.77
Yes	13	3.23
Level of knowledge regarding caesarean section		
Insufficient	342	85.07
Sufficient	60	14.93

Table 2 shows that 14.93%, *i.e.*, 60 respondents, had an adequate level of knowledge about overall post-caesarean recovery, the implications of caesarean section for future pregnancies, and analgesia during labour.

Table 3. Respondents' attitudes toward Cesarean section.

Variables	Sample size (n = 402)	Percentage (%)
Caesarean section is reserved for cases in which it is medically necessary.		
I completely disagree.	1	0.25
Disagree.	9	2.24
Neither agree nor disagree	38	9.45
Alright.	195	48.51
I completely agree.	159	39.55
Provide women with information on the risks and benefits of caesarean section before decision-making.		
I strongly disagree.	3	0.75
Disagreement.	2	0.50
Neither agree nor disagree	27	6.72
Alright.	212	52.73
I completely agree.	158	39.30
Introduce educational programs into ANC to promote vaginal birth after cesarean section when medically indicated.		
I completely disagree.	3	0.75
I disagree.	8	1.99
Neither agree nor disagree	48	11.94
Alright.	250	62.19
I completely agree.	93	23.13
Social perceptions of cesarean section influence women's decisions regarding their mode of delivery		
I strongly disagree.	100	24.87

Continued

Disagreement	104	25.87
Neither agree nor disagree	73	18.16
Alright.	97	24.13
I completely agree.	28	6.97
Include an in-depth discussion of delivery mode options in prenatal care.		
I strongly disagree.	2	0.50
In disagreement	3	0.75
Neither agree nor disagree	30	7.46
Okay	222	55.22
I completely agree.	145	36.07
Variables Sample size (N = 402) Percentage (%)		
Considering patients' preferences and wishes is essential when planning a cesarean section.		
I completely disagree.	15	3.73
In disagreement	27	6.72
Neither agree nor disagree	85	21.14
Alright.	240	59.70
I completely agree.	35	8.71
Attitudes toward caesarean section		
Appropriate	119	29.60
Inappropriate	283	70.40

Table 3 shows that 195 respondents (48.51%) agreed that caesarean section is reserved for medically necessary cases. Regarding the introduction of caesarean-section topics into the ANC program, more than 60% of respondents had an appropriate attitude for each topic.

Overall, the attitude was appropriate among 119 respondents, *i.e.*, 29.6% (Table 3).

Table 4. Respondents' practices regarding Cesarean section.

Variables	Participants (n=402)	Percentage (%)
Frequency of performing or assisting with cesarean section		
Never	49	12.19
Rarely	69	17.16
Sometimes	105	26.12
Often	111	27.61
Very often	68	16.92
Human resources required to perform a cesarean section in the health facility		
Very insufficient	2	0.50
Insufficient	59	14.67
Acceptable	223	55.47
Sufficient	108	26.87
Very sufficient	10	2.49

Continued

Access to continuing education and training on Caesarean section techniques and practice.		
No access	100	24.88
Limited access	201	50.00
Moderate access	93	23.13
High access level	8	1.99
Practical considerations relative to Cesarean section		
Appropriate	119	29.60
Inappropriate	283	70.40

Table 4 shows that 111 (27.61%) had often practiced or assisted in a cesarean section. In practice, 223 (55.47%) found acceptable the availability of the resources required to perform cesarean sections. In contrast, 201 (50%) had limited access to continuing training on techniques and practices related to cesarean section.

Table 5. Bivariate analyses of factors associated with knowledge.

Variables	Level of knowledge		ORb	95% CI	p
	Insufficient	Sufficient			
	N = 342 (%)	N = 60 (%)			
Age groups (years)					
≤25	48 (14, 04)	16 (26, 67)	1		
26 - 35	155 (45, 32)	20 (33, 33)	0.39	0.19 - 0.80	0.01
35 - 45	100 (29, 24)	17 (28, 33)	0.51	0.24 - 1.07	0.07
>45	39 (11, 40)	7 (11, 67)	0.54	0.18 - 1.61	0.27
Sex					
Female	181 (52, 92)	38 (63, 33)	1		
Male	161 (47, 08)	22 (36, 67)	0.65	0.36 - 1.18	0.16
Qualification					
Nurse	148 (43, 27)	13 (21, 67)	1		
Midwife	107 (31, 29)	25 (12, 08)	2.66	1.25 - 5.63	0.01
Physician	87 (25, 44)	22 (36, 67)	2.88	1.33 - 6.24	0.007
Experience (year)					
<5	100 (29, 24)	20 (33, 33)	1		
5 - 10	118 (34, 50)	22 (36, 67)	0.93	0.47 - 1.85	0.84
11 - 15	54 (15, 21)	7 (11, 67)	0.6	0.23 - 1.55	0.29
≥16	70 (20, 47)	11 (13, 33)	0.75	0.34 - 1.65	0.48
Having benefited from the EMonC					
No	269 (78, 66)	13 (21, 67)	1		
Yes	73 (21, 34)	47 (78, 33)	13.33	6.74 - 26.35	<0.001

Continued

Attitude					
Inappropriate	249 (72, 81)	34 (56, 67)	1		
Appropriate	93 (27, 19)	26 (43, 33)	2.04	1.17 - 3.56	0.01
Practical					
Inappropriate	265 (77, 45)	17 (28, 33)	1		
Appropriate	77 (22, 55)	43 (71, 67)	8.71	4.74 - 16.01	<0.001

Appropriate attitudes and practices, as well as EmONC training, are significantly associated with adequate knowledge of cesarean section (Table 5).

Table 6. Bivariate analyses of factors associated with attitude.

Variables	Attitudes		ORb	95% CI	p
	Inappropriate n = 283 (%)	Appropriate n = 119 (%)			
Age groups (years)					
≤25	47 (16, 61)	16 (13, 45)	1		
26 - 35	117 (41, 34)	58 (48, 74)	1.46	0.75 - 2.84	0.26
36 - 45	80 (28, 27)	37 (31, 09)	1.36	0.68 - 2.73	0.38
>45	39 (13, 78)	8 (06, 72)	0.6	0.23 - 1.57	0.29
Sex					
Feminine	147 (51, 94)	72 (60, 50)	1		
Male	136 (48, 06)	47 (39, 50)	0.7	0.44 - 1.12	0.14
Qualification					
Nurse	118 (41, 70)	43 (36, 14)	1		
Midwife	81 (28, 62)	51 (42, 86)	1.73	1.03 - 2.90	0.03
Physician	84 (29, 68)	25 (21, 00)	0.82	0.47 - 1.44	0.49
Years of experience (year)					
<5	91 (32, 16)	29 (24, 37)	1		
5 - 10	97 (34, 28)	43 (36, 13)	1.39	0.80 - 2.41	0.23
11 - 15	43 (15, 19)	18 (15, 13)	1.31	0.65 - 2.66	0.45
≥16	52 (18, 37)	29 (24, 37)	1.75	0.93 - 3.29	0.08
Having completed the EmONC training					
No	231 (81, 63)	51 (42, 86)	1		
Yes	52 (13, 37)	68 (57, 14)	5.92	3.62 - 9.69	<0.001

Table 6 shows that the midwife qualification and having received EmONC training were associated with an appropriate attitude toward caesarean section.

Healthcare professionals aged 36 - 45 years were associated with appropriate caesarean section practices. In addition, those who had completed EmONC training were more than six times more likely to have appropriate caesarean section practices than those who had not received this training (Table 7).

Table 7. Bivariate analyses of factors associated with the practice.

Variables	Practices		ORb	95% CI	p
	Inappropriate n = 283 (%)	Appropriate n = 119 (%)			
Age groups (year)					
≤25	52 (18, 38)	11 (09, 24)	1		
26 - 35	124 (43, 82)	50 (42, 02)	1.91	0.92 - 3.96	0.08
36 - 45	70 (24, 73)	47 (39, 50)	3.17	1.51 - 6.66	0.002
>45	37 (13, 07)	11 (09, 24)	1.41	0.56 - 3.55	0.46
Sex					
Feminine	164 (57, 95)	55 (46, 22)			
Masculine	119 (42, 05)	64 (53, 78)	1.6	1.02 - 2.52	0.04
Qualification					
Nurse	121 (42, 76)	40 (36, 61)	1		
Midwife	107 (37, 81)	25 (21, 01)	0.71	0.40 - 1.28	0.26
Physician	55 (19, 43)	54 (47, 38)	2.97	1.71 - 5.17	<0.001
Years of experience (year)					
<5	88 (31, 10)	32 (26, 89)	1		
5 - 10	100 (35, 34)	40 (33, 61)	1.1	0.63 - 1.91	0.73
11 - 15	38 (13, 43)	23 (19, 33)	1.67	0.85 - 3.27	0.13
≥16	57 (20, 14)	24 (20, 17)	1.16	0.63 - 2.15	0.63
Having completed the EmONC training program					
No	232 (81, 98)	50 (42, 02)	1		
Yes	51 (18, 02)	69 (57, 98)	6.27	3.86 - 10.19	<0.001

Table 8. Multivariable logistic regression of factors associated with knowledge, attitudes, and practices regarding Caesarean section.

Variables	Knowledge	p	Attitude	p	Practice	p
	ORa (95% CI)		OR (95% CI)		ORa (95% CI)	
26 - 35	1.05 (0.59 - 1.88)	0.86	1.08 (0.53 - 2.21)	0.83	1.38 (0.70 - 2.72)	0.35
36 - 45	1.02 (0.56 - 1.87)	0.95	0.97 (0.46 - 2.04)	0.93	1.18 (0.57 - 2.44)	0.66
>45	0.98 (0.50 - 1.91)	0.95	0.52 (0.19 - 1.41)	0.2	0.69 (0.25 - 1.89)	0.46
Sex (Male)	0.88 (0.54 - 1.42)	0.6	0.69 (0.41 - 1.16)	0.16	1.28 (0.78 - 2.10)	0.33
Midwife	2.11 (1.03 - 4.33)	0.04	1.41 (0.77 - 2.59)	0.27	0.88 (0.49 - 1.60)	0.67
Physician	2.34 (1.09 - 5.01)	0.03	0.57 (0.29 - 1.13)	0.11	1.75 (0.98 - 3.15)	0.06
EmONC training (Yes)	7.82 (3.41 - 17.92)	<0.001	3.12 (1.78 - 5.48)	<0.001	8.45 (4.85 - 14.72)	<0.001
Appropriate practices	6.45 (3.12 - 13.34)	<0.001	2.67 (1.50 - 4.74)	0.001	n/a	n/a
Sufficient knowledge	n/a	n/a	2.21 (1.14 - 4.28)	0.02	7.12 (3.76 - 13.50)	<0.001
Appropriate attitude	n/a	n/a	n/a	n/a	2.75 (1.52 - 4.97)	0.001

Age ≤ 25 years was used as the reference category.

Table 8 indicates that training in EmONC was associated with sufficient knowledge, as well as appropriate attitudes and practices regarding caesarean sec-

tion. In addition, sufficient knowledge was also a facilitating factor for the adoption of appropriate attitudes and practices.

4. Discussion

4.1. General Characteristics of the Respondents

Table 1 shows that the most represented participants were women aged 26 - 35 years. In addition, 132 participants (32.84%) were midwives. Moreover, most had between 5 and 10 years of professional experience. These findings are consistent with those of a study conducted in Tanzania, in which the authors reported that the majority of maternity staff were relatively young, trained as midwives, and had at least seven years of professional experience [20].

4.2. Assessment of Respondents' Knowledge, Attitudes, and Practices Regarding Cesarean Section (Tables 2-4)

The results of this survey show that respondents had an insufficient level of knowledge regarding the consequences of caesarean section for subsequent pregnancies. This finding is consistent with the results reported by Kamal *et al.* in a study conducted in Saudi Arabia [21]. The consequences of this deficit will repeatedly be evident during antenatal care (ANC) visits, when pregnant women with a scarred uterus are deprived of useful information on vaginal birth after caesarean (VBAC) [22]. Moreover, this lack of information may increase the risk of maternal-fetal complications, due to insufficient anticipation in the management of long-term caesarean-related complications [23]. In the present study, respondents' knowledge of the usual duration of physical recovery after caesarean section was found to be inadequate. According to WHO recommendations, physical recovery after caesarean section generally lasts six to eight weeks, and this topic should be addressed during postnatal consultations [16]. Adequate knowledge of this timeframe enables health professionals to provide women with realistic information regarding the gradual resumption of daily, occupational, and sexual activities after childbirth [16]. In his study on postpartum recovery, Frijmersum found 15 weeks as the median duration of recovery after caesarean delivery. He therefore considered the six-to-eight-week recovery period recommended by the WHO to be insufficient for physical recovery after caesarean section [24].

The results of the present study highlighted that healthcare professionals had an insufficient level of knowledge regarding the different analgesic routes during labour. Bitew *et al.* reported that, in resource-limited settings, inadequate knowledge related to labour analgesia is associated with neglect, which is itself influenced by sociocultural perceptions of labour pain [25]. Indeed, as Mwakawanga noted, in some sub-Saharan African contexts, labour pain is often perceived as a natural phenomenon that does not require specific management [26]. This perception contradicts the WHO-promoted approach of humanized, person-centred care. The WHO recommends that all women should have access to analgesia throughout labour [27]. Moreover, in the DRC, in addition to these perceptions surround-

ing labour pain, the shortage of anaesthesia specialists also constitutes a major constraint on the implementation of obstetric analgesia [28]. Regarding participants' attitudes, most participants agreed that caesarean section should be performed when medically necessary. They also believed that women should receive clear information about the benefits and risks of this intervention before making a decision. These results are consistent with WHO recommendations, which advocate using caesarean section only when medically justified [3]. Concerning informing pregnant women about the risks and benefits of caesarean section, the attitude adopted by most professionals proved appropriate. Indeed, according to WHO recommendations regarding postpartum follow-up, it is the responsibility of health professionals to provide women with systematic, clear, and understandable information on the benefits and risks associated with caesarean section [27]. This helps to strengthen patients' autonomy and to limit the use of caesarean sections that are not medically justified. However, less appropriate attitudes alone are not sufficient to bring about positive change. Certain factors interfere with its implementation, including high workload, lack of specific training in communication, organizational constraints, and sociocultural barriers [29].

Most respondents stated that adherence to guidelines was important. In Rwanda, researchers found that most professionals did not comply with the WHO protocol for caesarean section practice [30]. Although our respondents considered adherence to the protocol important, in practice the observed situation is similar to that reported in Rwanda. We believe this may be due to limited monitoring of protocol implementation through formative supervision by managers of health facilities.

A very small proportion of respondents reported having access to continuing education on techniques and practices related to caesarean section. This gap has been observed in low-resource countries. Nevertheless, the authors unanimously agree that continuing education improves knowledge, and that new knowledge enhances competence [31].

4.3. Factors Associated with Providers' Level of Knowledge, Attitudes, and Practices Regarding Cesarean Section (Tables 5-8)

The present study highlights a significant association between professional qualification (physician and midwife) and the level of knowledge regarding caesarean section. This finding supports the argument advanced by Frenk *et al.* [32], who believe that an imbalance exists in the local labour market. In their view, the problem is systemic. A mismatch is observed between the expected professional training and the degrees awarded. This situation generates a further mismatch between the skills acquired and the needs of patients and the population.

In this study, knowledge, attitude, and practice were not associated with age or experience. For Cho *et al.*, age alone does not necessarily have a positive impact on cognitive aspects. To observe a beneficial effect, other factors must be involved,

such as the environmental context, culture, or health status [33]. Moreover, Sobczak adds that, in the acquisition of knowledge, individual motivation plays a central role, particularly curiosity and the effort to remain regularly up to date [34]. Although experience is often considered a driver of knowledge and good practice, our results show that it is not associated with knowledge, practice, or attitude. This suggests that experience alone, in the absence of favorable conditions such as repetition, diversity of contexts, and support, is insufficient to develop appropriate skills or behaviors [35]. Moreover, training in Emergency Obstetric and Neonatal Care (EmONC) was associated with a higher level of knowledge. Indeed, capacity building among providers improves their skills in emergency obstetric and neonatal care and enables more appropriate practices, as demonstrated by studies conducted in Africa [36] [37].

5. Strengths of the Study

Conducted in a rural setting, this study provides up-to-date data on healthcare professionals' knowledge, attitudes, and practices regarding caesarean section. It addressed subtopics that are rarely discussed during antenatal and postnatal consultations, particularly the duration of physical recovery after caesarean section, the management of labor pain, and access to continuing professional education. Exploring these themes supports informed decision-making by patients regarding caesarean section.

6. Study Limitations

Although the sample size was sufficient for the included maternity units, it limits the generalizability of the findings to all healthcare professionals in the Democratic Republic of the Congo. Moreover, certain contextual variables, particularly those related to workload, were not examined.

7. Conclusion

Overall, healthcare professionals demonstrated insufficient levels of knowledge and practices regarding cesarean section. The lack of EmONC training and gaps in communicating essential information to patients limited the adoption of safe practices. These results underscore the need to strengthen the competencies of healthcare professionals through continuing education on EmONC and communication about the risks of cesarean section during prenatal and postnatal consultations.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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