

Midwifery Training Competences and Quality Maternity Care among Final Year Midwifery Students of Fako Division, South West Region-Cameroon

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ABSTRACT

The connection between practice and theory is important as it shows one's ability to use evidence to increase one's understanding of ideal concepts, justify decision-making, and in order to perfect present and future practice of midwifery for the good of humanity. Included objectives were to assess the final year student's theoretical knowledge, technical skills and challenges they encounter during maternity care services with respect to their code of ethics. This was a descriptive observational cross-sectional study targeting 92 final year midwifery students of the Fako division. Four school were chosen for this study (University of Buea, Biaka University Institute, Redemption Higher Institute of Biomedical Sciences and Maflekumen Higher Institute) and five hospitals (Buea Regional Hospital, CMA Muea, Limbe Regional Hospital, District Hospital Limbe and CMA limbe) using purposive sampling. Data was collected using a semi-structured questionnaire, which concerned to assessed the knowledge on quality maternity care and challenges they faced in the maternity. The observational- checklist was divided into 2 sections. The first section the skills carried on by the final year students in the maternity and the second part their ethical acquisition. Data was analyzed using statistical package for social sciences (SPSS), version 23. Of the 91 participants, 76 (83.5%) had good knowledge on quality maternity care, 64 (70.3%) had good skills on quality maternity care and 79 (86.8%) had good ethical acquisition on quality maternity care. Evidence showed that, students faced a lot of challenges in the maternity with first 88 (96.7%) for the lack of instruments.

The knowledge, skills and ethical acquisition of the final year midwifery students was good. A large list of challenges like vaginal examination and oxygen administration was faced by the students and it should be taken into consideration as they may influence future acquirement of competences, which may in turn affect patient care.

1. Background

The global shortage of health workers in general, and of midwives in particular, is well acknowledged, as is the fact that investment in the health workforce is key to the achievement of the Sustainable Development Goals (SDGs) [1,2]. Many countries have responded to the shortage of midwives by increasing the number of midwifery education programmes and available student places [2]. However, increasing the size of the midwifery workforce only addresses the availability of midwives. It is also necessary to take into account the quality of care that they are competent and

enabled to provide, otherwise increased availability may not result in improved health outcomes [3,4]. In 2013, the World Health Organisation (WHO) recommended that there should be international efforts to ensure that health worker education in all countries is properly regulated and guided by global standards [5]. Such efforts have been made for medical education: the World Federation for Medical Education published a guideline for basic medical education in 2005, which was designed to be used as a basis for accreditation of pre-service education

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KEYWORDS: Midwifery, knowledge, practice, theory, training, competence, final year, midwifery student and maternity care.

programmes [6]. In 2016, there was a call for international efforts to improve the regulation of midwifery education [7]. Although global standards exist for midwifery education [8], a standard global accreditation system has not been designed around them (although some regional and national standards do exist [9,10,11]). Conscious of this and of the pressing need for investments in quality midwifery care especially in low and middle-income countries in order to achieve the health-related SDGs [2], the International Confederation of Midwives (ICM) has developed a global Midwifery Education Accreditation Programme (MEAP) in collaboration with the Swiss Tropical and Public Health Institute (Swiss TPH).

A theory according to Kerlinger is “a set of interrelated concepts, that present a systematic view of phenomena by specifying relations among variables with the purpose of explaining the phenomena” [12]. Practice, on the other hand, is the actual application or use of an idea, belief, or method, as opposed to theories relating to it. The customary, habitual, or expected procedure or way of doing of something, repeated exercise in or performance of an activity or skill so as to acquire or maintain proficiency in it [13]. The connection between practice and theory is important, as linking theory and practice shows that one understands the tie-in between what you are learning at university and how that knowledge is in the field of the real world [14].

In Cameroon, midwifery course content contains a mixture of theory and practice. Courses vary across the country, but are designed to prepare a student for the responsibilities of being a midwife which include caring for women throughout pregnancy, birth, and during the postnatal period too, as well as care for newborn babies. Midwifery clinical challenges include restrictive legislation and business-related barriers, including but not limited to physician supervision restrictions, prescriptive authority, out-of-hospital birth legislation, and third-party reimbursement [15]. Educational challenges highlighted include that the faculty in nursing and midwifery educational institutions in developing countries is, in general, inadequate. There is often insufficient academic preparation of faculty members. The faculty-student ratio is as high as 1:45 compared to 1:12 in developed countries. In addition, only 6.6% of the teaching staff in developing countries have had formal preparation in education and/or the qualifications needed to enter, or progress as teachers in higher educational institutions [16]. It is further emphasized that: “in preparing the workforce, the curriculum is expected to meet standards that are

often defined as core competencies”. Such curricula should be responsive to the changing state and knowledge of health and needs to meet clients’ expectations [17]. Global access to midwifery care could prevent several maternal and newborn deaths [18]. There is a call for skilled health professionals worldwide, and educated midwives are the most appropriate caregivers for women during pregnancy and childbirth [19,20].

Normally in midwifery training by the 3rd year and upon completion, the midwifery students should be able to integrate theoretical knowledge and concepts into practical skills for quality maternity care. This will enable them to be advanced beginners upon completion and so enable them to adapted into the professional core smoothly. However, it has been observed and remarked by practising midwives and nurses in our local health facilities that most 3rd year midwifery students cannot practice midwifery safely. The critics are usually very sharp, making these students feel inadequate and learning on the field is jeopardized [21].

Most often upon completion some students are employed immediately to practice and provide quality maternity care. But with the lack of skills, they cannot practice and quality care is jeopardized. And so, this situation if not checked, may contribute to poor quality with poor consequences of mortality and maternal deaths. During practice in the hospital there is memory recall, that recall learning psychomotor (practice) and affective domains of learning. All these will be difficult to achieve if the midwifery student is unable to recall theoretical knowledge and transfer it into practical skills for the satisfaction of patients in terms of safe delivery and maternity care and to build self confidence in the students midwives. Students experienced so many problems and the most common especially in the Fako Division are; problems on wards associated with inadequacies in supplies and instruments, students’ recommendation for improving clinical practices and problems with staff personnel [22].

1.2. Justification of the study

Theory and practice in an organized framework of concepts and purposes designed to guide the practice of midwifery or nursing. Most of the time students show high performance in theoretical activities rather than practice or in practice rather than theoretical but rarely the 2 simultaneously. These may occur due to some difficulties they encounter such as method of teaching, curriculum, method of learning and match gap. The research is done to come with those factors which is bringing in the gap between the theory and practice of final year midwifery student related to

quality maternity care in order to ensure competent and committed midwives at the end of their program, and also to reduce the rate of morbidity and mortality of infant and mothers.

1.3. Research Questions

1. What is the theoretical knowledge of final year midwifery students related to quality maternity care in the Fako Division?
2. What are the technical skills performed by final year midwifery students in the field related to quality maternity care in the Fako Division?
3. What are the ethical acquisition performed by final year midwifery students on the field related to quality maternity care in the Fako Division?
4. What are the challenges encountered by final year midwifery students to implement their theoretical knowledge in the practice for safe delivery and quality maternity care?

1.4. Research Hypotheses

2. Final year midwifery students theoretical knowledge and maternity care are good.
3. Final year midwifery student technical skills and maternity are poor.
4. Ethical values acquisition related in quality maternity care has certain effects among final midwifery students.
5. Challenges are encountered by final year midwifery students on implementing theory to practice with respect to quality maternity care.

1.5. Research Objectives

1.5.1. General Objective

To assess the competences of final year midwifery students related to quality maternity care.

1.5.2. Specific Objectives

1. To assess final year midwifery student's theoretical knowledge on quality maternity care.
2. To assess final year midwifery students' technical skills on quality maternity care.

3. To identify the effect their ethical values acquisition of knowledge related in quality maternity care amongst final year midwifery students.
4. To assess the challenges encountered by final year midwifery student's on implementing theory to practice with respect to quality maternity care.

1.6. Scope of Study

This study was carried out in Fako division, South West Region-Cameroon. It will focus on final year midwifery students of the Fako division. The study was carried out from November 2021 to September 2022. The study is limited to midwifery training and quality maternity care of final year midwifery students in the Fako division. The study assessed the knowledge, skills and ethical acquisition on maternity care of the students with addition the challenges they faced to implement theory into practice

2. MATERIALS AND METHODS

2.1. Study Design

The study was a descriptive-observational study. In Cameroon, midwifery undergraduate education is divided into three years. Only year three midwifery students in the Fako Division was included in the study; and data collection was done in-site in the schools.

2.2. Study Area

The study was conducted in the Fako Division. Fako is a division in the Southwest Region of Cameroon, which is one of the 10 regions of the country. Fako Division covers an area of 2093 km square and is known to have a population of 534,854 inhabitants [101]. It is further divided into 6 subdivisions or communes which are Buea, Limbe I, Limbe II, Limbe III, Muyuka and Tiko [102]. The main towns found in the Fako Division are Limbe (capital), Buea, Mutengene, Tiko and Muyuka [101]. Only 4 schools in this Division offer midwifery education and will hence be included in the study. These institutions are the University of Buea, Biaka University Institute, Redemption Institute of Buea and Maflekumen Institute of Tiko.

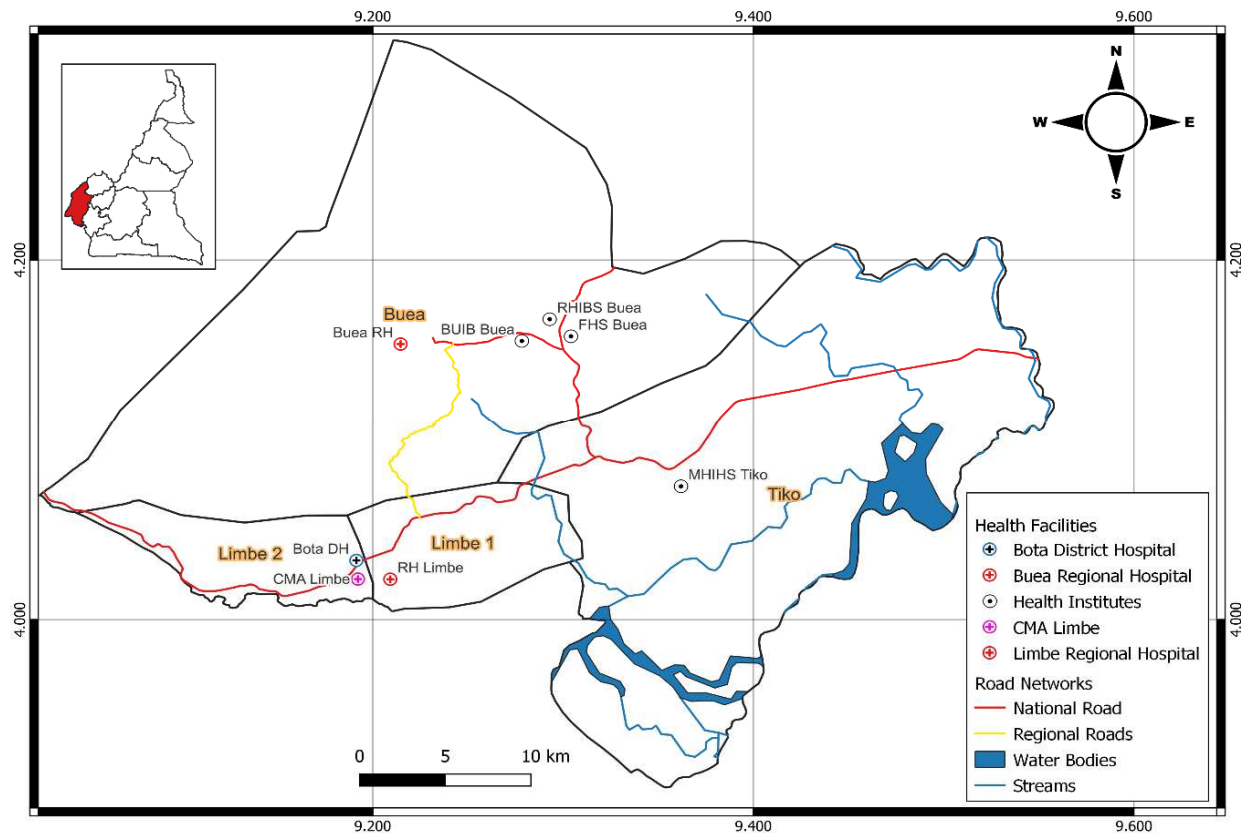


Fig 1: Map of the Fako Division showing subdivisions

Source: [103]

2.3. Study Population

The study population targeted all the four school in Fako Divison attending midwifery training, which were: University of Buea, Biaka University Institute, Redemption Higher Institute of Biomedical Sciences and Maflekumen Higher Institute/School of Health Sciences. All having final year midwifery students.

2.4. Sample Size

An estimate of the minimum required sample size for the study was obtained using the Lorentz formula [104]:

Lorentz formula

$$\frac{Z^2 P(1-P)}{e^2} \dots \dots \dots (1)$$

n = sample size

Z_1 = Critical value and a standard value for the corresponding level of confidence (At 95% confidence interval, it is 1.96)

P= Prevalence of skilled final year midwifery students obtained from a study by Tchounga et al [28]

$$n = \frac{(1.96)^2 (0.2)(0.8)}{(0.05)^2} \dots \dots \dots (2)$$

$$n = \frac{0.614656}{0.0025}$$

n= 246 participants (shared into 4 schools).

2.5. Sampling Technique

A non-probability purposive sampling technique was used. The choice of the universities and higher institutions chosen for this study was based on the fact that they have final year midwifery students attending them. The 4 schools were: University of Buea (Buea), Biaka University Institute (Buea), Redemption Higher Institute of Biomedical Sciences (Buea) and Maflekumen Higher Institute/School of Health Sciences (Tiko). The hospitals of interest were the Buea Regional Hospital, Limbe Regional Hospital, CMA Muea, Bota District Hospital and CMA Limbe. This minimum sample size was divided into the 4 schools using probability proportionate to size sampling.

Schools	UB	BUIB	RHIBMS	MAFLEKUMEN
Frequency of students (N)	33	26	6	27
Calculation	33/92 * 246	26/92*246	6/92* 246	27/92 * 246
Sample size (participants)	88	70	16	72

2.5.1. Inclusion Criteria

All final year undergraduate students studying midwifery in the universities and higher institutions of interest in the Fako Division.

2.5.2. Exclusion Criteria

All final year students studying midwifery that are not available at the time of data collection.

2.6. Data Collection Tools and Method

Two main data collection tools were used for this study. A semi-structured questionnaire closed and opened ended (Appendix I) was used to collect data on socio-demographic characteristics, knowledge and challenges of the participants. Also, an observational-checklist was used containing skills and ethical acquisition of the participants on the field (Appendix II). A scoring method [98] was used to score the knowledge, skills and ethical acquisition of the participants as either good or poor. When an activity was not well performed it means, it was neglected or done with a lot of mistakes, not done as expected producing poor results. When an activity was well performed, it means it was done as expected producing satisfactory results. When an activity was perfectly performed it means done as expected producing very satisfactory results, going far beyond the stated expectations. The questionnaire was shared to the students during their time of classes in school then the observational checklist was used during the students clinical internships.

2.7. Data Collection and Pre-testing

Pre-testing of questionnaire

To ensure that the questionnaire was correctly written and easy to understand, they were pre-tested. Pre-testing was done on 10 final year nursing students. After this, the questionnaire was adjusted to fit standards.

Data collection procedure

The researcher went to the universities and higher institutions. The first step was to obtain consent from them (Appendix IV). An informed form was read to them where they were given explanation on it expected of them and also reassures that their information will be kept confidential. Once obtained, questionnaire was shared to final year undergraduate midwifery students to obtain data on the characteristics of interest. The researcher ensures that the questionnaire was properly filled. After that, permission was obtained from various hospitals where the students did their practices, so that observations on practice could be made (Appendix VI). An observational- checklist containing standard safe practices was used to evaluate the practice level of the students during their internship's periods and a training manual for assistance [105] was used to train them on how to carry out observational checklist.

2.8. Data Management and Analysis

Each participant was assigned a code number for confidentiality. The questionnaire was kept in a closed cupboard for safety. The data from the questionnaire and the observational- check list was keyed into Epi Info version 7 software and then exported into Microsoft Excel 2013. Data analysis was done using the Statistical Package for Social Sciences (SPSS) version 23. All qualitative results were presented in mean, standard deviation, frequencies and chart.

2.9. Ethical Considerations

Before collecting data on the field, the following were obtained and used:

- Administrative authorization from Biaka University Institute.
- Administrative authorizations from the regional delegation of the Ministry of Public Health for the South West Region.
- Ethical clearance from the Institutional Review Board of Faculty of Health Science of the University of Buea.
- Authorizations from the various universities to obtain permissions to conduct the study in their institutions.
- Authorizations from the hospitals where observations were made.

- F. All participants were clearly informed about the study purpose and process and about their freedom to withdraw from the study when they wish without giving an explanation.
- G. Confidentiality of the participants was respected by using codes for each of them and not disclosing any of their information to the school staff and classmates.
- H. An informed consent form for participants with their name, signature and phone number.

3. RESULTS AND INTERPRETATION

3.1. Sociodemographic characteristics of the participants

A total of 91 participants were included in the study and data was collected from them. Data revealed that majority of the participants (n= 57), giving a percentage of 62%, were in between the age group of 21-23 years with a mean age of 23.74 ± 2.118 years. The female gender was the most represented with (n= 76, 83.5%) with participants and most participants were single (n=83, 91.2%). Moreover, 78 (85.7%) participants were of Christian religion. Finally, majority of them (n=33, 36.3) went to school at the Faculty of Health Sciences, University of Buea. This information is summarized in table 1.

Table 1a: Sociodemographic characteristics of final year midwifery students in the Fako Division.

Characteristic	Frequency No(%)
Age group (years)	
21-23	57 (62.6)
24-26	21 (23.1)
27-30	13 (14.3)
Total	91 (100)
Sex	
Male	15 (16.5)
Female	76 (83.5)
Total	91 (100)
Marital status	
Married	8 (8.8)
Single	83 (91.2)
Total	91 (100)
Religion	
Christian	78 (85.7)
Muslim	6 (6.6)
Traditionalist	7 (7.7)
Total	91 (100)

Table 1b: Sociodemographic characteristics of final year midwifery students in the Fako Division.

Characteristic	Frequency No (%)
Number of children	
0	74 (81.3)
1	10 (11.0)
2	5 (5.5)
3	2 (2.2)
Total	91 (100)
Level of education	
BSc	52 (57.1)
HND	39 (42.9)
Total	91 (100)
Monthly revenue	
5000 – 10 000	33 (36.3)
10 001 – 20 000	26 (28.6)
20 001 – 30 000	1 (1.1)
30 001 – 40 000	18 (19.8)
>40 000	13 (14.2)
Total	91 (100)

School	33 (36.3)
FHS - UB	26 (28.6)
Biaka	27 (29.6)
Maflekumen	5 (5.5)
Redemption	91 (100)
Total	

3.2. Knowledge of participants on quality maternal care

A scoring method obtained from a previous study [98] was used to score the knowledge of the participants as either good or poor. There were 13 questions used to assess knowledge. Each correct response was attributed one point and each wrong response was attributed zero point. Participants who scored >70% were considered as having "appropriate or good" knowledge on quality maternity care, while those who scored <70% were considered as having "inappropriate or poor" knowledge. On a total of 13 questions, 70% represented 9 questions. After analysis, the majority of the participants, that is 76 (83.5%), were found to have good knowledge on quality maternal care; while 15 (16.5%) were found to have poor knowledge on maternity care as seen in figure 2.

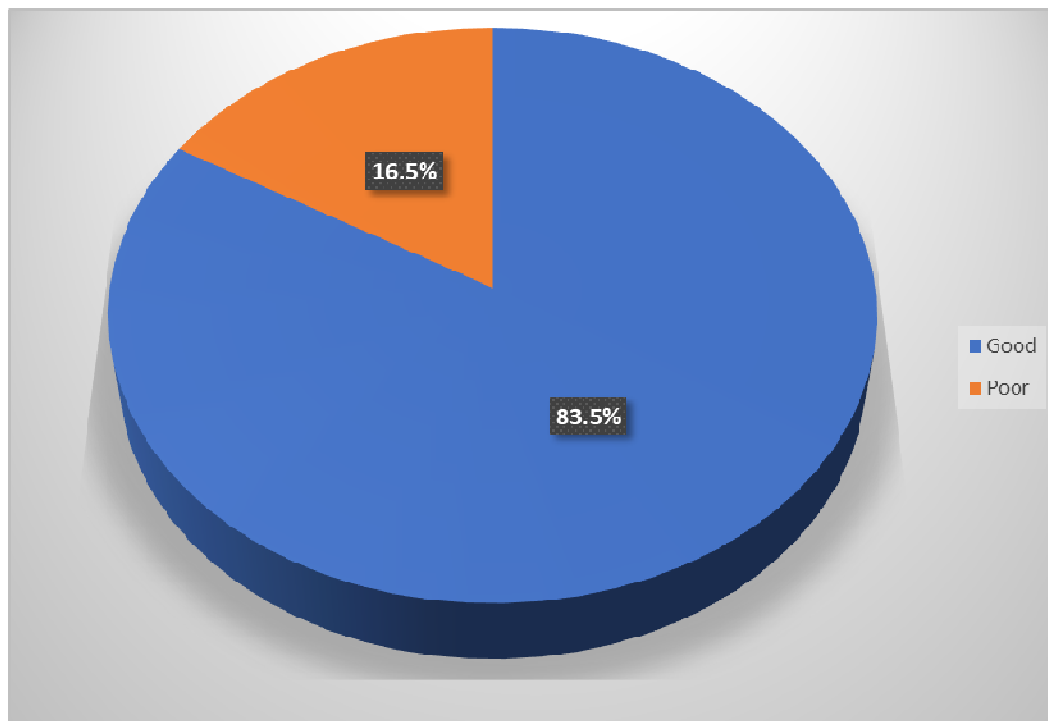


Fig 3: Knowledge of participants on quality maternity care

Furthermore, association between knowledge of the participants on quality maternity care and their sociodemographic characteristics was investigated. Considering significant statistical association at $P < 0.05$, no significant association existed between their sociodemographic characteristics and their knowledge, since all P-values were above 0.05. This is summarized in table 2.

Table 2a: Association between knowledge of participants on maternity care and sociodemographic characteristics

Characteristic	Knowledge		Chi-square	P- value
	Good	Poor		
Age group (years)				
21-23	46	11	2.994	0.224
24-26	17	4		
27-30	13	0		
Total	76	15		
Sex				
Male	65	11	1.353	0.245
Female	11	4		
Total	76	15		

Marital status				
Married	7	1		
Single	69	14	0.101	0.751
Total	76	15		
Religion				
Christian	65	13		
Muslim	5	1	0.027	0.981
Traditionalist	6	1		
Total	76	15		
Number of children				
0	62	12		
1	7	3	2.713	0.438
2	5	0		
3	2	0		
Total	76	15		
Level of education				
BSc	44	8		
HND	32	7	0.106	0.744
Total	76	15		

Table 2b: Association between knowledge of participants on maternity care and sociodemographic characteristics

Characteristic	Knowledge		Chi-square	P- value
	Good	Poor		
Monthly revenue (Fcf)				
5000 – 10 000	12	1		
10 001 – 20 000	18	8		
20 001 – 30 000	1	0	6.092	0.192
30 001 – 40 000	15	3		
>40 000	30	3		
Total	76	15		
School				
FHS - UB	22	4		
Biaka	29	4		
Maflekumen	20	7	3.214	0.36
Redemption	5	0		
Total	76	15		

3.3. Skills of participants on quality maternity care

Data collection on the level of skills of the participants on quality maternity care was obtained using a checklist which was filled after observation of the students' practice in hospitals and other sites of practical setting. A scoring method was used to classify the participants under "good skills" and "poor skills". A total of 18 activities were used to assess the level of skills of the participants. Activities that were noted as "well performed" or "perfectly performed" were attributed one point, while those which were noted as "not well performed" were attributed zero points. On a total of 18 questions, participants who scored >70% were considered to have good skills; while those with <70% were considered to have poor skills. For 18 questions, 70% represented 13 questions. This gave a total of 64 (70.3%) participants with good skills and 27 (29.7%) participants with poor skills on quality maternity care. Assessment of these activities on the students is summarized in table 3.

Table 3a: Summary of the evaluation of the skills of the participants on quality maternity care

Activity	Responses	Frequency No(%)
Setting for the delivery process	Not well performed	0 (0)
	Well performed	60 (65.9)
	Perfectly performed	31 (34.1)
Physical examination	Not well performed	0 (0)
	Well performed	50 (54.9)
	Perfectly performed	41 (45.1)

Communication with patients	Not well performed	0 (0)
	Well performed	64 (70.3)
	Perfectly performed	27 (29.7)
Use of PPE	Not well performed	0 (0)
	Well performed	65 (71.4)
	Perfectly performed	26 (28.6)
Taking in of V/S	Not well performed	0 (0)
	Well performed	48 (52.7)
	Perfectly performed	43 (47.3)
Assessment of cervical dilation	Not well performed	29 (31.9)
	Well performed	60 (65.9)
	Perfectly performed	2 (2.2)
Use of Partogram	Not well performed	42 (46.2)
	Well performed	45 (49.5)
	Perfectly performed	4 (4.4)
Assessment of labor	Not well performed	0 (0)
	Well performed	70 (76.9)
	Perfectly performed	21 (23.1)
Drug administration	Not well performed	28 (30.8)
	Well performed	17 (18.7)
	Perfectly performed	46 (50.5)
Delivery of baby	Not well performed	42 (46.2)
	Well performed	32 (35.2)
	Perfectly performed	17 (18.7)
APGAR scoring	Not well performed	13 (14.3)
	Well performed	32 (35.2)
	Perfectly performed	46 (50.5)
Delivery of placenta	Not well performed	42 (46.2)
	Well performed	32 (35.2)
	Perfectly performed	17 (18.7)
Uterine revision	Not well performed	87 (95.6)
	Well performed	4 (4.4)
	Perfectly performed	0 (0)

Table 3b: Summary of the evaluation of the skills of the participants on quality maternity care

Activity	Responses	Frequency No(%)
Baby assessment	Not well performed	0 (0)
	Well performed	64 (70.3)
	Perfectly performed	27 (29.7)
Baby drug administration	Not well performed	0 (0)
	Well performed	44 (48.4)
	Perfectly performed	47 (51.6)
Post-natal care	Not well performed	16 (17.6)
	Well performed	28 (51.6)
	Perfectly performed	47 (30.8)
Post-natal education	Not well performed	14 (15.4)
	Well performed	64 (70.3)
	Perfectly performed	13 (14.3)
Cleaning of used equipment	Not well performed	0 (0)
	Well performed	44 (48.4)
	Perfectly performed	47 (51.6)

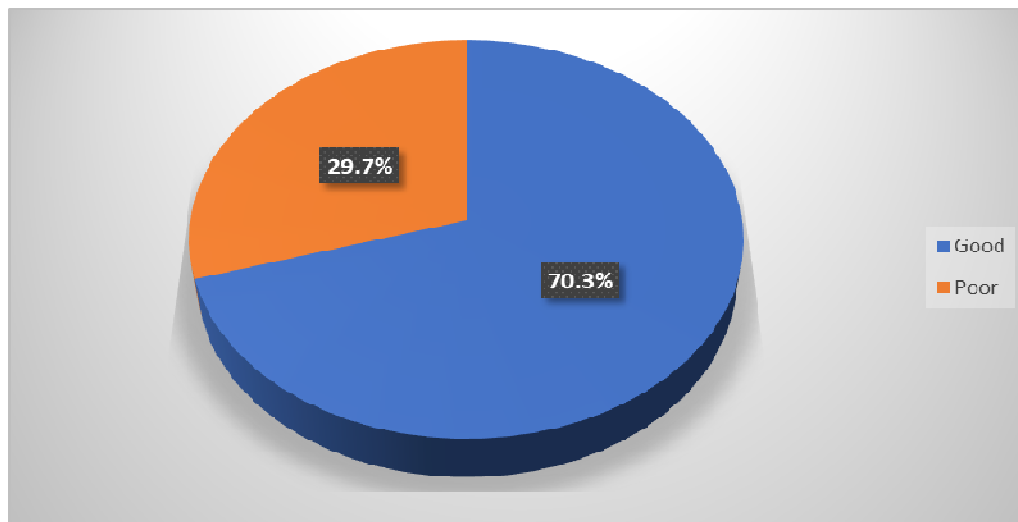


Fig 4: Technical skills of participants on quality maternity care

3.3.1. Association between skills of participants on quality maternity care and sociodemographic characteristics.

Furthermore, the association between the skills of the participants and their sociodemographic characteristics was investigated using Chi-square test. At $P < 0.05$, there was no significant association between skills and the sociodemographic characteristics of the participants. The chi-square tests performed showed no significant association between variables since all P- values were above 0.05 (tables 4a and 4b).

Table 4a: Association between skills on quality maternity care and sociodemographic characteristics of the participants

Characteristics	Good Skills No (%)	Poor Skills No (%)	Chi-square	P- value
Age group				
21-23	41 (45)	16 (17.6)	0.212	0.899
24-26	14 (15.4)	7 (7.7)		
27-30	9 (9.9)	4 (4.4)		
Total	64 (70.3)	27 (29.7)		
Sex				
Male	11 (12.1)	4 (4.4)	0.078	0.781
Female	53 (58.2)	23 (25.3)		
Total	64 (70.3)	27 (29.7)		
Marital status				
Married	7 (7.7)	1 (1.1)	1.239	0.266
Single	57 (62.6)	26 (28.6)		
Total	64 (70.3)	27 (29.7)		
Religion				
Christian	57 (62.6)	21 (23.1)	4.222	0.121
Muslim	2 (2.2)	4 (4.4)		
Traditionalist	5 (5.5)	2 (2.2)		
Total	64 (70.3)	27 (29.7)		

Table 4b: Association between skills on quality maternity care and sociodemographic characteristics of the participants.

Characteristics	Good Skills No (%)	Poor Skills No (%)	Chi-square	P- value
Number of children				
0	49 (53.8)	25 (27.5)	3.522	0.892
1	9 (9.9)	1 (1.1)		
2	4 (4.4)	1 (1.1)		
3	2 (2.2)	0 (0.0)		
Total	64 (70.3)	27 (29.7)		

Level of education				
BSc	35 (38.5)	17 (18.7)		
HND	29 (31.9)	10 (10.9)	0.531	0.466
Total	64 (70.3)	27 (29.7)		
Monthly revenue				
5000 – 10 000	22 (24.2)	11 (12.1)		
10 001 – 20 000	19 (20.9)	7 (7.7)		
20 001 – 30 000	1 (1.1)	0 (0.0)	1.115	0.892
30 001 – 40 000	12 (13.2)	6 (6.6)		
>40 000	10 (10.9)	3 (3.3)		
Total	64 (70.3)	27 (29.7)		
School				
FHS - UB	22 (24.2)	11 (12.1)		
Biaka	18 (19.8)	8 (8.8)		
Maflekumen	20 (21.9)	7 (7.7)	0.633	0.889
Redemption	4 (4.4)	1 (1.1)		
Total	64 (70.3)	27 (29.7)		

3.4. Ethical acquisition of participants related to quality maternity care

Data collection on ethical acquisition of the participants on quality maternity care was obtained using the observational checklist. Determination of good and poor ethical acquisition was done using a scoring method. Participants who were noted “well performed or perfectly performed” for each characteristic were given one point; while those who were noted “not well performed” were given zero point. Participants who recorded >70% were considered as having good ethical acquisition, while those with <70% were considered as having poor ethical acquisition. On a total of 6 characteristics, those with 4 points and above were considered as having good ethical acquisition and those with less than 4 points were considered as having poor ethical acquisition. This gave a total of 79 (86.8%) participants with good ethical acquisition and 12 (13.2%) participants with poor ethical acquisition (table 5).

Table 5: Summary of the ethical acquisition of the participants related to quality maternity care

Characteristics	Responses	Frequency No(%)
Veracity	- Not well performed	14 (15.4)
	- Well performed	43 (47.3)
	- Perfectly performed	34 (37.4)
Autonomy	- Not well performed	11 (12.1)
	- Well performed	66 (72.5)
	- Perfectly performed	14 (15.4)
Benefits	- Not well performed	14 (15.4)
	- Well performed	64 (70.3)
	- Perfectly performed	13 (14.3)
Justice	- Not well performed	11 (12.1)
	- Well performed	80 (87.9)
	- Perfectly performed	0 (0.0)
Non maleficence	- Not well performed	13 (14.3)
	- Well performed	78 (85.7)
	- Perfectly performed	0 (0.0)
Fidelity	- Not well performed	13 (14.3)
	- Well performed	78 (85.7)
	- Perfectly performed	0 (0.0)

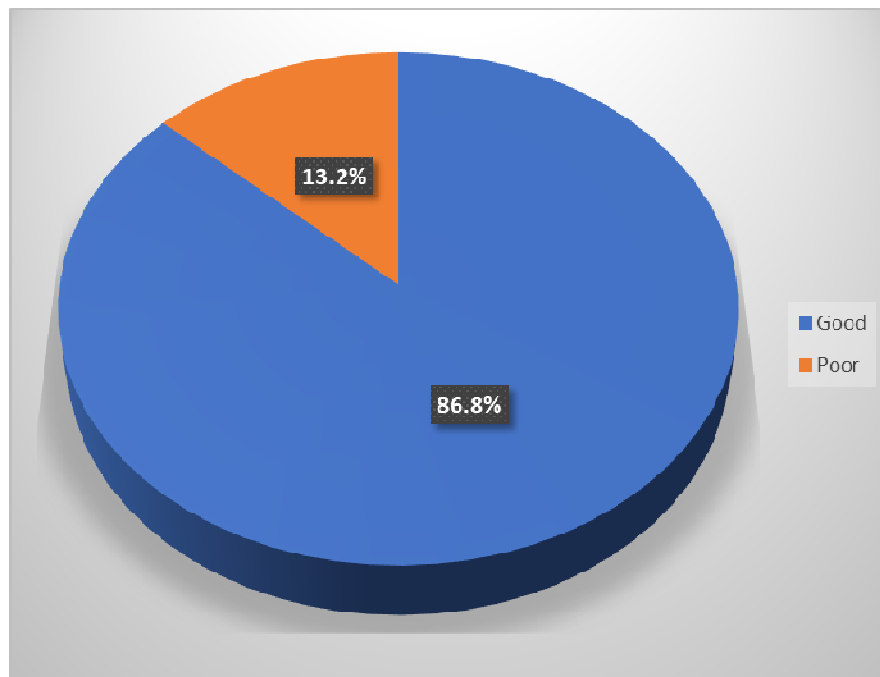


Fig 5: Ethical acquisition of participants related to quality maternity care

3.4.1. Association between ethical acquisition and sociodemographic characteristics of the participants

Moreover, the association between ethical acquisition and sociodemographic characteristics of the participants was investigated using a Chi-square test. Of the 8 characteristics that were investigated, 2 showed significant statistical association since their P-value was greater than 0.05. There was a significant association between ethical acquisition and level of education with a P-value of 0.016; and also, between ethical acquisition and the school attended with a P-value of 0.047 (table 6).

Table 6a: Summary of the association between ethical acquisition and sociodemographic characteristics of the participants

Characteristics	Good Ethical acquisition No (%)	Poor Ethical acquisition No (%)	Chi-square	P-value
Age group (years)				
21-23	53 (58.2)	4 (4.4)	5.076	0.079
24-26	16 (17.6)	5 (5.5)		
27-30	10 (10.9)	3 (3.3)		
Total	79 (86.8)	12 (13.2)		
Gender				
Male	13 (14.3)	2 (2.2)	0.000	0.985
Female	66 (72.5)	10 (10.9)		
Total	79 (86.8)	12 (13.2)		
Marital status				
Married	7 (7.7)	1 (1.1)	0.004	0.952
Single	72 (79.1)	11 (12.1)		
Total	79 (86.8)	12 (13.2)		
Religion				
Christian	69 (75.8)	9 (9.9)	1.696	0.453
Muslim	5 (5.5)	1 (1.1)		
Traditionalist	5 (5.5)	2 (2.2)		
Total	79 (86.8)	12 (13.2)		
Number of children				
0	64 (70.4)	10 (10.9)	0.602	0.896
1	9 (9.9)	1 (1.1)		
2	4 (4.4)	1 (1.1)		
3	2 (2.2)	0 (0.0)		
Total	79 (86.8)	12 (13.2)		

Level of education				
BSc	49 (53.9)	3 (3.3)		
HND	30 (32.9)	9 (9.9)	5.831	0.016
Total	79 (86.8)	12 (13.2)		

Table 6b: Summary of the association between ethical acquisition and sociodemographic characteristics of the participants

Characteristics	Good Ethical acquisition No (%)	Poor Ethical acquisition No (%)	Chi-square	P-value
Monthly income				
5000 – 10 000	31 (34.1)	2 (2.2)	3.624	0.459
10 001 – 20 000	21 (23.1)	5 (5.5)		
20 001 – 30 000	1 (1.1)	0 (0.0)		
30 001 – 40 000	16 (17.6)	2 (2.2)		
>40 000	10 (10.9)	3 (3.3)		
Total	79 (86.8)	12 (13.2)		
School				
- FHS - UB	33 (36.3)	0 (0.0)	7.970	0.047
- Biaka	21 (23.1)	5 (5.5)		
- Maflekumen	21 (23.1)	6 (6.6)		
- Redemption	4 (4.4)	1 (1.1)		
Total	79 (86.8)	12 (13.2)		

3.5. Challenges encountered by participants on implementing theory to practice with respect to quality maternity care

After review of the data collected, a list of 29 challenges faced by final year midwifery students on implementing quality maternal care were recorded. The most reported challenge faced was the lack of adequate instruments, which was reported by 88 (96.7%) students. This was followed by challenges in calculating and administering drugs [72 (79.1%)] and challenges in oxygen administration [67 (73.6%)]. The least reported challenges were cord care, bathing the baby and assessment of the lochia with 2 (2.2) participants (table 7).

Table 7a: Summary of the evaluation of the challenges faced by final year midwifery students in quality maternal care in the Fako Division

Challenges	Frequency No(%)
History taking	17 (18.7)
Clinical examination	27 (29.7)

Table 7b: Summary of the evaluation of the challenges faced by final year midwifery students in quality maternity care in the Fako Division.

Challenges	Frequency No(%)
Document accurately care given to ensure continuity of care	15 (16.5%)
Monitor the effects of pharmacological drugs for management of complications	10 (11.0)
Vaginal examination	20 (22.0)
Taking of fetal heartbeat with fetoscope	17 (18.7)
Administer oxytocin appropriately for labor induction or augmentation and treatment of Intrapartum and postpartum bleeding	18 (19.8)
Perform manual removal of the placenta	28 (30.8)
Identify maternal infections, treat or refer for treatment as appropriate	18 (19.8)
Utilize the midwifery management process in managing women with medical and obstetrical conditions and complications	46 (50.5)
Counsel and support women and families where necessary	10 (11.0)
APGAR score assessment tool	6 (6.6)
Clearing of airways	13 (14.3)
Cutting and clumping cord	12 (13.2)
Cord care	2 (2.2)

Table 7c: Summary of the evaluation of the challenges faced by final year midwifery students in quality maternity care in the Fako Division.

Challenges	Frequency No(%)
Application of eye ointment	6 (6.6)
Identification of danger signs of the newborn	14 (15.4)
Supporting mother to initiate breastfeeding	11 (12.1)
Wrapping / dressing baby	6 (6.6)
Bathing the baby	2 (2.2)
Inspection of perineum	4 (4.4)
Assessment of lochia	2 (2.2)
Health education	6 (6.6)
Oxygen administration	67 (73.6)
Initiate kangaroo mother care	15 (16.5)
Calculate and administer drugs	72 (79.1)
Preparing midwifery care plans	27 (29.7)
Lack of instruments	88 (96.7)
Complicated relationship with health personnel	24 (26.4)

3.6. Association between knowledge and skills of the participants on quality maternity care

A chi-square test was used to investigate whether there was any statistical significant difference between knowledge and skills of the participants, that is, between theory and practice. The results obtained did not show any significant difference between theory and practice with a P-value of 0.37, considering statistical significance at $P < 0.05$.

4. Discussion

4.1. Theoretical knowledge of participants on quality maternity care

Findings from this study showed that there was a greater good to poor ratio of knowledge on quality maternity care in the participants of 76 (83.5%): 15 (16.5%). This finding is greater than what was obtained in studies done in Nigeria and South Africa where 66.7% and 62.1% of the participants, respectively, had good knowledge on the active management of stages of labour, which is part of maternity care that was [99,100]. These results are highly encouraging and may reflect good teaching skills in the schools of interest. Theoretical knowledge makes the way easier to practically apply things, because theory teaches the broader experiences.

On the other hand, no relationship could be established between the knowledge and the sociodemographic characteristics of the students. This is contrary to results obtained in a study by Muzeya [106], where the knowledge of the participants was significantly associated with their gender. Justification for this was suggested to be due to gender inequality in the profession, as female students were believed to be given more access to some aspects of the midwifery care, since it is viewed as a

female-oriented profession, particularly in this cultural and social context [107].

4.1.1. Technical skills of participants on quality maternity care

After observation, it was concluded that the majority of the participants had good skills on quality maternity care (70.3%), compared to a minority which had poor skills (29.7%). This finding is contradictory to results obtained on a study conducted in Ethiopian about how well does pre-service education prepare midwives for practice: competence assessment of midwifery students at the point of graduating in Ethiopia. Where students lacked satisfactory performance scores on essential competences for safe and effective practice [108]. It is also contrary to results obtained in a study on nurse-midwives' students in India, who reported less confidence in managing procedure during antenatal and postnatal phases [109].

Moreover, there was no statistically significant association between skills of the participants and their sociodemographic characteristics. This is in line with findings from previous studies where skills could not be associated with sociodemographic characteristics of the participants [106,109]. The lack of significant statistical relationship between students' skills and sociodemographic variables could be due to the relatively small sample size in this study, and it may be possible to observe significant statistical difference by increasing the sample size.

4.1.2. Ethical acquisition of participants related to quality maternity care

The overall result of this study regarding the students' ethical acquisition towards quality maternity care showed that a majority of the students had good

ethical acquisition with 79 (86.8%), while 12 (13.2%) had poor ethical acquisition. This majority had positive attitude toward all the 6 principles of autonomy, non-maleficence, patient check-up, justice, benefits and, health personnel and student relationship. This result is in line with a study by Motamed-Jahromi, where students' attitude was reported as completely positive except for the principles of justice and honesty [110]. The reported good ethical acquisition is very important for clinical environments and patient-health personnel relationship, and authorities should do their best to maintain this attitude in students during practice at patient bedside.

Further analysis also showed that there was a statistical significant relationship between ethical acquisition and level of education of the participants ($P= 0.016$); and ethical acquisition and school attended by the participants ($P= 0.047$). This is contrary to a previous study where ethical acquisition was significantly associated with gender and marital status of the students [111]. This can portray the influence of the teaching environment and teaching staff on the ethical acquisition of students.

4.1.3. Challenges encountered by participants on implementing theory to practice with respect to quality maternity care

The lack of instruments was the most reported challenge with 88(96.7%) of the students reporting it; while bathing the baby, cord care and assessment of lochia were the least reported with 2 (2.2%) of the students who reported it. The lack of instruments reflects a poor working environment for midwifery students, and this was also reported in previous studies done in China, Afghanistan, Bangladesh, Bhutan, India, Nepal and Africa in general [112,113,114,115] Quality of care can be compromised by poor working conditions and insufficient basic resources. This calls for concern, as it is not only the quality of the education of the midwifery students that is affected, but also the quality of the care that is given to the patients.

4.2. Limitations of the Study

The following limitations can be associated with this study:

1. The relatively small sample size of this study could reduce the generalizability of its findings.
2. Studying the knowledge, skills and challenges of the students through self-reporting method could also overestimate the results of this research.

4.3. Conclusion

From the study, it can be concluded that: Final year midwifery students of the Fako division have good knowledge (83.5%) on quality maternity

care. They were knowledgeable about post-partum complications which trimester has the most crucial health lifestyle. For students' retention of information, understanding of how to learn best is important.

Final year midwifery students of the Fako division have good technical skills (70.3%) on quality maternity care. But most of them had poor performance on uterine revision and how to use a partogram this could be due to the fact that opportunity it's not given to them when going to their different internship sites.

Final year midwifery students of the Fako division have good ethical acquisition (86.8%) on quality maternity care. They were able to perform justice code of ethics in terms of providing education and foster access to good nutrition, clean water and a safe environment.

The final year midwifery students' challenges were numerous and must be taken into consideration. The most reported challenge was the lack of adequate instruments in the field which can widen the theory-practice gap.

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Data Availability

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Clinical Trial: Not Applicable

Consent To Publish Declaration: Not Applicable

Ethics And Consent to Participate Declarations: Not Applicable

REFERENCES

- [1] World Health Organization website: Global strategy on human resources for health: workforce 2030. Geneva: WHO.2016.
- [2] UNFPA, WHO, ICM The state of the world's midwifery 2014: A universal pathway. A woman's right to health. New York: United Nations Population Fund; 2014.
- [3] Van L.W., Matthews Z., Achadi E., Country experience with strengthening of health systems and deployment of midwives in countries with

- high maternal mortality. *Lancet*. 2014; 384:1215–10.
- [4] Measure evaluation Bangladesh maternal mortality and health care survey Available from: <https://www.measureevaluation.org/resources/publications/fs-17-245-en/>. Accessed on Jan 30 2022.
- [5] World Health Organization website: Transforming and scaling up health professional education and training. Geneva: WHO.2013. Accessed on Jan 30 2022.
- [6] WFME Basic medical education WFME standards for quality improvement: the 2015 revision. *Ferney-Voltaire: WFME*. 2015.
- [7] WHO Strengthening quality midwifery education: WHO meeting report July 25-26 2016. Geneva: WHO. 2017. Accessed on
- [8] ICM Global Standards for Midwifery Education .2013. Available from: http://internationalmidwives.org/assets/uploads/documents/CoreDocuments/ICMStandardsGuidelines_ammended2013.pdf. Accessed on 3 Feb 2022.
- [9] WAHO Résolution pour l'approbation et l'adoption du curriculum harmonisé de formation en médecine générale dans l'espace CEDEAO. *CEDEAO website*.2013. Available from: http://www.wahooas.org/IMG/pdf/1_Resolution_Curriculum_H_F_M_G.pdf. Accessed on 17 Feb 2022.
- [10] ACME Criteria for programmatic accreditation of midwifery education programs with instructions for elaboration and documentation. 2015. Available from: [http://www.midwife.org/ACNM/files/ccLibraryFiles/Filename/000000006672/CriteriaforProgrammaticAccreditationofMidwiferyEducationPrograms\(June2013April2015\)updatedpassrateinstructionsforclarityJune2016_June2017.pdf](http://www.midwife.org/ACNM/files/ccLibraryFiles/Filename/000000006672/CriteriaforProgrammaticAccreditationofMidwiferyEducationPrograms(June2013April2015)updatedpassrateinstructionsforclarityJune2016_June2017.pdf). Accessed on 27 Feb 2022.
- [11] Government of Sierra Leone Ministry of Health and Sanitation Standards for accreditation of basic nursing and midwifery educational institutions and programs in Sierra Leone. *GoSL*. Freetown. 2016.
- [12] John S., Edmund W.O. Theory noun - Definition, pictures, pronunciation and usage notes. *Oxford Advanced Learner's Dictionary 10th ed*. London.2021.
- [13] Fred N. K. Book of Foundations of Behavioural Research. 1973. Accessed 23 Nov 2021
- [14] Ten H.B., Nove A., Sochas L. The 'Dream Team' for sexual, reproductive, maternal, newborn and adolescent health: an adjusted service target model to estimate the ideal mix of health care professionals to cover population need. *Human Resource Health*. 2017; 15:46.
- [15] UNFPA, WHO, ICM. The state of the world's midwifery 2014: a universal pathway. *A woman's right to health*. New York. 2014.
- [16] Maternity Services, History of Midwives in London. *Royal College of midwives*.2020.Available from: <https://TheHistoryofMidwifery-howfarwe'vecome.rcm.org.uk>. Accessed on 27 Oct 2022.
- [17] Homer C.S., Friberg I.K., Dias M.A. The projected effect of scaling up midwifery. *Lancet*. 2014; 384:1146–1157.
- [18] Amanda B. Androus. BSN History of midwives. Sept 2020.
- [19] Renfrew M., M.A., Bastos M.H. Midwifery and quality care: findings from a new evidence-informed framework for maternal and newborn care. *Lancet*. 2014;384:1129–1145.
- [20] World Health Organisation. Antenatal care. Available from: <https://www.who.int/reproductivehealth/news/antenatal-care/en/>. Accessed on 28 Sept 2022.
- [21] World Health Organization. WHO recommendations on antenatal care for a positive pregnancy experience: evidence base. *WHO website*. Available from: <https://apps.who.int/iris/bitstream/handle/10665/250796/9789241549912-websupplement-eng.pdf?sequence=8>. Accessed on 23 Jun 2022.
- [22] International Confederation of Midwives. ICM resource packet 2 model curriculum outline for professional midwifery education. Available from: [http://internationalmidwives.org/assets/uploads/documents/Model%20Curriculum%20Outlines%20for%20Professional%20Midwifery%20Education/ICM%20Resource%20Packet%20Model%20Curriculum\(20Outline%20NEW\).pdf](http://internationalmidwives.org/assets/uploads/documents/Model%20Curriculum%20Outlines%20for%20Professional%20Midwifery%20Education/ICM%20Resource%20Packet%20Model%20Curriculum(20Outline%20NEW).pdf). Accessed on 23 Jun 2022.
- [23] Ten HB.P., Bernis L., Campbell J. Improvement of maternal and newborn health through midwifery. *Lancet*. 2014; 27:1226–1235.

- [24] Suzanne M.T. Evaluating the effect of an educational intervention on students midwife self-efficacy for their role as physiological childbirth advocates. 2020.
- [25] Panda S., Dash M., John J., Rath K., Debata A., Swain D., Mohanty K., Eustace-Cook J. Challenges faced by student nurses and midwives in clinical learning environment - A systematic review and meta-synthesis. *Nurse Education Today*. 2021;101:104875. doi: 10.1016/j.nedt.2021.104875. PMID: 33774528.
- [26] Education and Scope of Practice in Gujarat, India. Stockholm, Sweden. *Karolinska Instituted*.2014.
- [27] Richard F., John D. Encyclopaedia. USA. *Northwest Missouri State University*. Accessed 23 Nov 2021.
- [28] Zagzebski L. Virtues of the Mind: An Inquiry into the Nature of Virtue and the Ethical Foundations of Knowledge. *Cambridge University Press*. Cambridge.1996.
- [29] Steadman S. Defining practice. *Teacher Education Advancement Network Journal*. 2018;10 (1):3-9. Retrieved 30 Nov 2021.
- [30] Gary R.V. APA dictionary of psychology (2nd ed.). *American Psychological*. 2015.
- [31] Alaa. E.M. Definition of theory and theory-building related concepts. *GRIN Verlag*. Munich.2014. Available from <https://www.grin.com/document/285956>. Accessed 30 Nov 2021.
- [32] Linking theory and Practice [Internet] London: Flinders university Student learning and support service; 2022 Apr 12. Available from: linking-theory-and-practice.pdf (flinders.edu.au) .
- [33] Logan and Olmstead. National association for Olmsted Parks. *The journal of the Victorian Society in America*. 2000;Volume 20(2):32–37.
- [34] Daramola, I, Ndoma J, Brown, Israel W. Udomisor: Introduction to mass communication. Lagos. *Rothman Press Ltd*. Accessed on 23 Nov 2021.
- [35] Noel Macnamara. Intensive therapeutic care system. April, 2019.
- [36] Kenneth JR. Professional Nursing Practice at Sinai Hospital of Baltimore.2020.
- [37] Amanda Bucceri A. BSN History of midwives. Sept 2020.
- [38] Sally P, Judith MC. Nurse Key Fastest: Nurse Insight Engine. Theoretical frameworks for midwifery practice | Nurse Key.
- [39] New parent support Available: What is a midwife? NCT. Accessed on 23 Nov 2021.
- [40] Renfrew M, McFadden A, Bastos MH. Midwifery and quality care: findings from a new evidence-informed framework for maternal and newborn care. *Lancet*. 2014;384:1129–1145.
- [41] Hurley J.what is a midwife? Available from: <https://www.webmd.com/baby/what-is-a-midwife-twins> Accessed 8 Sep 2022.
- [42] International definition of midwife. International confederation of midwife. Revised and adopted at Toronto Council meeting, 2017.
- [43] Spouse J. Bridging the theory and practice in the supervisory relationship: A sociocultural perspective. *Journal of Advanced Nursing*. 2001.33(4): 512-522.
- [44] Frances W and Mzwandile M. Key concepts in public health. 2019.
- [45] Kozhimannil KB, Hardeman RR, Henning-Smith C. Maternity care access, quality, and outcomes: a systems-level perspective on research, clinical, and policy needs. *Semin Perinatol*. 2017; 41: 367 – 74.
- [46] Petersen EE, Davis NL, Goodman D, Cox S, Mayes N, Johnston E. Vital signs: pregnancy-related deaths, United States, 2011-2015, and strategies for prevention, 13 states, 2013-2017. *MMWR Morb Mortal Wkly Rep*. 2019; 68: 423 – 9.
- [47] World Health Organization. Quality of care. 2017. Available from: https://www.who.int/health-topics/quality-of-care#tab=tab_1. Accessed on 6 Sep 2022.
- [48] Shawkat J. Definition of Training. Available from: <https://hrmpractice.com/training/>. Accessed on 6 Sep 2022.
- [49] Smriti C. Training: Meaning, Definition and Types of Training. Available from: <https://www.yourarticlelibrary.com/human-resource-development/training-meaning-definition-and-types-of-training/32374>. Accessed on 8 Sep 2022.
- [50] Wong, S.-C. Competency Definitions, Development and Assessment: A Brief Review. *International Journal of Academic Research in*

- Progressive Education and Development*. 2020;(3): 95–114.
- [51] Fukada M. Nursing Competency: Definition, Structure and Development. *Yonago Acta Med*. 2018 Mar 28;61(1):1-7. doi: 10.33160/yam.2018.03.001. PMID: 29599616; PMCID: PMC5871720.
- [52] Healthcare process. Available from: https://contsys.org/concept/healthcare_process. Accessed on 6 Sep 2022.
- [53] Walker D., Lannen B., Rossie D., (May 31, 2014) "Midwifery Practice and Education: Current Challenges and Opportunities". *The Online Journal of Issues in Nursing*. Vol. 19, No. 2, Manuscript 4.
- [54] World Health Organization. Project on Scaling up Midwifery Education in Four African Countries, P16. *WHO website*. 2020. Available from: 9789290234494-eng.pdf. Accessed on 12 Mar 2022.
- [55] Kabakian-Khasholian T, Campbell O, Shediach-Rizkallah M, Ghorayeb F. Women's experiences of maternity care: satisfaction or passivity?. *Soc Sci Med*. 2000; 51: 103–13.
- [56] Steptoe-Warren G. Occupational Psychology: An Applied Approach. Harlow: Pearson Education. Available from <https://locate.coventry.ac.uk/>. Accessed 8 Sep 2022.
- [57] Nursing and Midwifery council, Standards of Proficiency for midwives. Nov 2019.
- [58] Mahomed K, Gülmezoglu AM. Maternal iodine supplements in areas of deficiency (Cochrane Review). The Cochrane Library, Issue 3 Oxford: Update Software.
- [59] American Nurses Association. Nursing: Scope and standards of practice (4th ed.). *American Nurses Association*. 2018.
- [60] Agency for Healthcare Research & Quality: Six domains of health care quality. 2018. Available from: <https://www.ahrq.gov/talkingquality/measures/six-domains.html>. Accessed on 23 Nov 2021
- [61] National Clinical Guideline Centre. Training and education of healthcare professionals. 2014.
- [62] Practice, meaning & definition for UK English: Practice Lexico Dictionaries in English. *Lexico Dictionaries*. Available from: <https://www.lexico.com/definition/practice>. Accessed 23 Nov 2021.
- [63] Windau-Melmer T. A Guide for Advocating for Respectful Maternity Care. *Futures Group, Health Policy Project*. Washington DC. 2013.
- [64] Vedam S, Stoll K, Rubashkin N, Martin K, Miller-Vedam Z, Hayes-Klein H. The mothers on respect (MOR) index: measuring quality, safety, and human rights in childbirth. *Social science and medicine*. *Population Health*. 2017; In press, January 2017.
- [65] Jenniskens F, Obwaka E, Kirisuah S, Moses S, Yusufali FM, Achola JO. Syphilis control in pregnancy: decentralization of screening facilities to primary care level, a demonstration project in Nairobi. *Kenyan International Journal of Gynaecology and Obstetrics*. 1995; 48: S121–8.
- [66] Sandall J, Soltani H, Gates S, Shennan A, Devane D. Midwife-led continuity models versus other models of care for childbearing women. *Cochrane Database of Systematic Review*. 2016;4:CD004667. doi:10.1002/14651858.CD004667.
- [67] Cameroon Higher National Diploma. 2018. vol.6:24.
- [68] University of Buea Administration & Faculty of Health Sciences Administration and Academic staff. Midwifery program (p.5-6). 17 Jun 2016.
- [69] Bourgeault IL, Canadian Electronic Library Push: the struggle for midwifery in Ontario. Montreal. *McGill Queen's University Press*. 2006. 346 p.
- [70] Canadian Association of Midwives. Midwifery Across Canada. 2016.
- [71] Stoll K, Hall W. Vicarious birth experiences and childbirth fear: does it matter how young canadian women learn about birth?. *Journal of Perinatal Education*. 2013;22(4):226–33.
- [72] American College of Nurse-Midwives. Our philosophy of care. Available from <http://www.midwife.org/Child-Page-3>. Accessed on December 23, 2021.
- [73] Nursing and Midwifery council, Standards for pre-registration midwifery education. 2020.
- [74] Bradfield Z, Hauck Y, Duggan R, Kelly M. Midwives' perceptions of being 'with woman': a phenomenological study. *BMC Pregnancy Childbirth*. 2019;19(1):363. doi: 10.1186/s12884-019-2548-4.

- [75] ICM. Role of midwives Definition. Available from: <http://internationalmidwives.org/who-we-are/policy-and-practice/icm-internationaldefinition-of-the-midwife>. Accessed on 7 Dec 2021.
- [76] WESolutions, Professional standards of practice and behaviours for nurses, midwives and nursing associates. Mar 2020.
- [77] Filby A, McConville F, Portela A. What prevents quality midwifery care? A systematic mapping of barriers in low and middle-income countries from the provider perspective. *PloS one*. 2016;11(5): e0153391.
- [78] World Health Organisation. Midwives voices, midwives realities: findings from a global consultation on providing quality midwifery care. Geneva. WHO; 2016.
- [79] Rubin R. Maternity Nursing Stops Too Soon. *American Journal of Nursing*. 1680-1684.
- [80] Labour and Delivery Care Module: 5. Conducting a Normal Delivery. Feb 2022.
- [81] Rubin R. Maternal Identity and the Maternal Experience. Springer Publishing. 1984.
- [82] Gay JT, Edgil AE, & Douglas AB. Reva Rubin Revisited. *JOGNN*. 1988:394-398.
- [83] Baas CI, Erwich JJ, Wiegers TA, De Cock TP, Hutton EK. Women's suggestions for improving midwifery care in the Netherlands Birth. 2015;42 (4):369-378. Doi: 10.1111/birt.12185.
- [84] Pregnancy, Childbirth, Postpartum and Newborn Care: A Guide for Essential Practice. 3rd edition. *World Health Organization*. 2015.
- [85] Adam Hayes: Ishikawa Diagram. *Investopedia*. Oct 2021.
- [86] International Federation of Gynecology and Obstetrics. FIGO Statement: Ethical Framework for Respectful Maternity Care During Pregnancy and Childbirth. 2021.
- [87] Darby F. Fidelity and Veracity in Nursing. London, 2021.
- [88] Education MHM. Guidelines for the revival of midwifery clinical education - Board of Experts and Evaluation of midwifery and reproductive health, approved by the supreme Council of Planning in Tehran. 2014.
- [89] Javadinia SA. Training and evaluation in medicine effective or ineffective: establishing an educational culture based on community health priorities. *Iran Journal of Medical Education*. 2014;14(2):187-8.
- [90] Yousefy A, Yazdannik AR, Mohammadi S. Exploring the environment of clinical baccalaureate nursing students' education in Iran; A qualitative descriptive study. *Nurse Education Today*. 2015; 35:1295-1300.
- [91] O'Connell R, Bradshaw C. Midwifery education in Ireland – The quest for modernity. *Midwifery*. 2016; 33:34-36. doi: 10.1016/j.midw.2015.12.00.
- [92] Donovan P. Confidence in newly qualified midwives. *British Journal of Midwifery*. 2008;16(8):510-514. doi: 10.12968/bjom.2008.16.8.30784.
- [93] Green S, Baird K. An exploratory, comparative study investigating attrition and retention of student midwives. *Midwifery*. 2009;25(1):79-87. doi: 10.1016/j.midw.2007.09.002.
- [94] Wain A. Examining the lived experiences of newly qualified midwives during their preceptorship. *British Journal of Midwifery*. 2017;25(7):451-457. doi: 10.12968/bjom.2017.25.7.451.
- [95] Hughes AJ, Fraser DM. 'SINK or SWIM': The experience of newly qualified midwives in England. *Midwifery*. 2011;27(3):382-386. doi: 10.1016/j.midw.2011.03.012.
- [96] Wain A. Examining the lived experiences of newly qualified midwives during their preceptorship. *British Journal of Midwifery*. 2017;25(7):451-457. doi: 10.12968/bjom.2017.25.7.451.
- [97] Lee K. Augmented reality in education and training. *TechTrends*. 2012;56(2):13-21. doi: 10.1007/s11528-012-0559-3 61.
- [98] Moran M, Banks D. An exploration of the value of the role of the mentor and mentoring in midwifery. *Nurse Educ Today*. 2016; 40:52-56. doi: 10.1016/j.nedt.2016.02.010.
- [99] Tchounga BK, Jaquet A. Cervical cancer prevention in reproductive health services: knowledge, attitudes and practices of midwives in Cote d'Ivoire, West Africa. *BMC Health Services Research*. 2014; 14:165.
- [100] Oyetunde MO, Nkwonta CA. Assessment of midwives competences in active management of third stage labour in primary health centres in Anambra State, Nigeria. *Journal of Applied Medical Sciences*. 2015; 4(2); 17-29.

- [101] Benedict M, Steinberg WJ, Raubenheimer JE. Knowledge of the management of postpartum hemorrhage by doctors and midwives working in Free-State district hospitals. *African Journal of Nursing and Midwifery*. 2016; 18 (2), 142-161. <https://doi.org/10.25159/2520-5293/812>.
- [102] Palle JN, Asang CNA, Chichom AM. Prevalence and pattern of lower extremity injuries due to road traffic crashes in Fako Divison, Cameroon. *PanAfrican Medical Journal*. 2019 ;32-53. Doi :10.11604/pamj.2019.32.53.17514.
- [103] Wikipedia. 2021. Available at: [https://en.m.wikipedia.org/wiki/Fako_\(departm ent\)](https://en.m.wikipedia.org/wiki/Fako_(departm%20ent)). Accessed on the 9-02-22.
- [104] Zebaze Mba Kevin, Map of Fako division in Cameroon depicting the location of study sites 6 August 2022.).
- [105] Pourhoseingholi MA, Vahedi M, Rahimzadeh M. Sample size calculation in medical studies. *Gastroenterol Hepatol Bed Bench*. 2013 ;6(1): 14-17.
- [106] Barbara Rawlins, Alice Christensen, and Julia Bluestone, United States Agency and international development and Maternal and child Health integrated program 2014.
- [107] Muzeya F, Julie H. Student midwives knowledge, skills and competency in relation to the active management of the third stage of labour: A correlational study. *Curationis*. 2020; 43(1); a2054. <https://doi.org/10.4102/curationis.v43i1.2054>.
- [108] Filby A, McConville F, Anayda P. What prevents quality midwifery care? A systematic mapping of barriers in low-and-middle-income countries from the provider perspective. *PLoS ONE*. 2016; 11(5):e0153391.
- [109] Yigzaw T, Ayalew F, Kim Y, Gelagay M, Dejene D, Gibson H. How well does pre-service education prepare midwives for practice: Competence assessment of midwifery students at the point of graduation in Ethiopia. *BMC Medical Education*. 2015; 15: 130-139. <https://doi.org/10.1186/s12909-015-0410-6>
- [110] Sharma B, Hildingson I, Johansson E, Prakasamma M, Ramani KV, Christensson K. Do the pre-service education programmes for midwives in India prepare confident “registered midwives”: A survey from India. *Global Health Action*. 2015; 8:29553. <https://doi.org/10.3402/gha.v8.29553>
- [111] Motamed-Jaromi M, Dehghani SL. Students’ attitudes toward principles of medical ethics and matching them with Islamic ethics in Kerman University of Medical Sciences. *JBUMS*. 2014; 16(7): 29-35
- [112] Jafari H, Khatony A, Abdi A, Jafari F. Nursing and midwifery students’ attitudes towards principles of medical ethics in Kermanshah, Iran. *BMC Medical Ethics*. 2019; 20:26. <https://doi.org/10.1186/s12910-019-0364-z>
- [113] Cheung NG, Liping-Zhang L, Mander R, Xu X, Wang X. Proposed continuing professional education programme for midwives in China: New mothers’ and midwives views. *Nurse Education Today*. 2011; 31: 434-438. <https://doi.org/10.1016/j.nedt.2010.08.014>
- [114] Petterson KO. Major challenges of midwifery students in Africa. *British Journal of Midwifery*. 2007; 15(8): 470-474.
- [115] Turkmani S., Currie S., Mungia J., Assefi N., Rahmanzai A.J., Azfar P. Midwives are the backbone of our health system: Lessons from Afghanistan to guide expansion of midwifery in challenging settings. *Midwifery*. 2013; 29(10): 1166-1172. <https://doi.org/10.1016/j.midw.2013.06.015>
- [116] Bogren UM., Wiseman A., Berg M. Midwifery education, regulation and association in six South Asian countries - A descriptive report. *Journal of Sexual and Reproductive Healthcare*. 2012; 3:67-72.