Scientific Research Publishing

Open Journal of Obstetrics and Gynecology, 2022, 12, 649-660
https://www.scirp.org/journal/ojog
ISSN Online: 2160-8806
ISSN Print: 2160-8792

Evaluation of the Adequacy between the Workload and the Number of State Midwives and Maieuticians Practicing in the Gynecology-Obstetrics Departments of the University Hospitals of Burkina Faso

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How to cite this paper: Millogo-Traore, T.F.D., Ouedraogo-Drabo, P.R.M.J. and Yameogo, P. (2022) Evaluation of the Adequacy between the Workload and the Number of State Midwives and Maieuticians Practicing in the Gynecology-Obstetrics Departments of the University Hospitals of Burkina Faso. *Open Journal of Obstetrics and Gynecology*, **12**, 649-660.
https://doi.org/10.4236/ojog.2022.127058

Received: May 31, 2022
Accepted: July 26, 2022
Published: July 29, 2022

Abstract

Objective: To evaluate the adequacy between the workload and the number of midwives and state midwives practicing in the gynecology-obstetrics services of the university hospitals of Burkina Faso. **Methodology:** This is a multicenter study conducted in 4 university hospitals representing this country (for brevity referred here to as A, B, C, and D) from May 1, 2018, to April 30, 2019. The Workload Indicators of Staffing Need (WISN) method was used to analyze the workload. **Results:** Dystocic delivery was the activity that took the most time. Inpatient activities were the most performed in terms of volume. At the University Hospitals D and C, there was an over-staffing of midwives and maïeuticians with a ratio of 1.93 and 2.12 respectively. At University Hospital B, the workload was in line with the existing number of State midwives and maieuticians. A low workload pressure (04%) was found at the University Hospital A. **Conclusion:** In most of the University Hospital Centers, there was no match between the workload and the number of midwives and maïeuticians. These results highlight the need for redeployment of midwives and maïeuticians in order to ensure good health coverage for midwives and maïeuticians.

Keywords

Workload, Midwives, Maïeuticians, WISN, University Hospital Center, Burkina Faso

1. Introduction

The 2030 Global Strategy for Health Human Resources [1] aims to accelerate progress towards Universal Health Coverage. This requires universal access to health workers. It is, therefore, essential to have an evidence-based planning method to estimate the necessary staffing of health care facilities, in order to help to provide and manage the required workforce where it is needed. The traditional methods used to determine staffing standards are based on the ratio of practitioners to the population. These ratios have limitations in determining the staffing requirements for a health care facility such as University Hospital.

To do this, we used the workload assessment method proposed by the WHO, which is the WISN (Worckload Indicators Staffing Need) tool.

2. Methodology

This is a descriptive and analytical retrospective study, using a quantitative approach in which a set of operations recommended by the WISN (Worckload Indicators Staffing Need) method or indicators of staffing needs in relation to workload, was used.

The study period extended from1May, 2018 to 30 April 2019. The data collection took place from 25 to July, 2020. The study, all midwives and maïeuticians practicing in the Gynecology-Obstetrics departments of a University Hospital Center in Burkina Faso during the study period and providing care. The study did not include midwives and maïeuticians working in the services of university hospitals that did not offer free care during the study period. A literature review grid was used to collect data. It included the following items: a first item to quantify service activities and determine the standard of these activities; a second item to determine the quantity of support activities and determine the standard of these activities; a third item to quantify additional activities and determine the standard of these activities; a fourth item to evaluate the number of spare days in relation to sick leave and other leaves (personal leaves, training leaves, etc.). The sources of data were consultation registers, personnel administrative files, monthly activity reports, and task allocation sheets. Our study was carried out in strict compliance with the confidentiality of information. We received the agreement of the Ministry of Health for the use of the statistical yearbooks of the various university hospitals.

3. Results/Discussion

Dystocic delivery was the activity that took the most time. Inpatient activities were the most performed in terms of volume (**Table 1**).

The following table summarizes not only all the activities of each hospital, but also the volume and time spent on each.

Tables 2-5 show us the procedure that leads to the estimation of the need for midwives and maïeuticians in each hospital.

In University Hospital A, the WISN estimate of required staff was 62 midwives

Table 1. Volume and time spent on service activities in four university hospital.

	University Hospital A					University HospitalB					University Hospital C					University Hospital D				
Service activities	**a**	**b**	**c**	**d**	**e**	**a**	**b**	**c**	**d**	**e**	**a**	**b**	**c**	**d**	**e**	**a**	**b**	**c**	**d**	**e**
Outpatient consultations	4633	8.22	35	162,155	4.10	4640	7.15	35	162,400	4.29	10,339	27.67	35	361,865	14.09	1389	8.65	35	302.69	4.15
First Prenatal consultations	511	0.91	45	22,995	0.58	6917	10.66	45	311,265	8.21	332	0.89	45	14,940	0.58	84	0.52	45	23.54	0.32
Prenatal consultations 2 and more	1514	2.69	30	45,420	1.15	1277	1.97	30	38,310	1.01	755	2.02	30	22,650	0.88	260	1.62	30	48.56	0.67
Screening for precancerous cervical lesions	2939	5.22	45	132,255	3.35	2835	4.37	45	127,575	3.37	1958	5.24	45	88,110	3.43	120	0.75	45	33.62	0.46
Management of precancerous cervical lesions	179	0.32	60	10,740	0.27	31	0.05	60	1860	0.05	17	0.05	60	1020	0.04	15	0.09	60	5.60	0.08
Post-abortion care	406	0.72	150	60,900	1.54	506	0.78	150	75,900	2.00	390	1.04	150	58,500	2.28	534	3.32	150	498.72	6.84
Eutocic deliveries	1710	3.03	240	410,400	10.39	87	0.13	240	20,880	0.55	1896	5.07	240	455,040	17.72	896	5.58	240	1338.90	18.36
Dystocic deliveries	5306	9.42	300	1,591,800	40.29	5306	8.18	300	1,591,800	42.01	2596	6.95	300	778,800	30.32	1378	8.58	300	2573.94	35.30
Emergency care of the newborn	242	0.43	40	9680	0.25	269	0.41	40	10,760	0.28	213	0.57	40	8520	0.33	396	2.47	40	98.62	1.35
Supervision and administration of care	9921	17.61	60	595,260	15.07	11,217	17.29	60	673,020	17.76	6261	16.76	60	375,660	14.63	4183	26.04	60	1562.67	21.43
Postnatal consultations	13,252	23.52	45	596,340	15.09	6640	10.24	45	298,800	7.89	3979	10.65	45	179,055	6.97	159	0.99	45	44.55	0.61
Participation in the medical visit	9921	17.61	15	148,815	3.77	11217	17.29	15	168,255	4.44	6261	16.76	15	93,915	3.66	4183	26.04	15	390.67	5.36
Family planning/Short term	1139	2.02	45	51,255	1.30	1497	2.31	45	67,365	1.78	767	2.05	45	34,515	1.34	80	0.50	45	22.41	0.31
Family planning/Long term	1318	2.34	60	79,080	2.00	1217	1.88	60	73,020	1.93	1599	4.28	60	95,940	3.74	199	1.24	60	74.34	1.02
Dispensing at thehospital pharmacy						11,217	17.29	15	168,255	4.44										
Vaccination	3360	5.96	10	33,600	0.85															
Bandages																2185	13.60	20	272.09	3.73

a = Volume of activity; b = Volume of activity in %; c = Average time to complete an activity (in minutes); d = Time spent on one activity; e = Time spent in %.

Table 2. Estimated need for midwives and maïeuticians in university hospital A.

Available Working Time: 1 612.8 hours				
	Workload Components	**Annual workload**	**Workload standard**	**Required number of midwives**
Health service activities performed by all midwives	Postnatal consultations	13,252	2716.80	4.88
	Outpatient consultations	4633	2113.07	2.19
	Eutocic deliveries	1710	396.20	4.32
	First Prenatal consultations	511	2113.07	0.24
	Prenatal consultations 2 and more	1514	3169.60	0.48
	Dystocic deliveries	5306	316.96	16.74
	Emergency care of the newborn	242	2377.20	0.10
	Supervision and administration of care	9921	1584.80	6.26
	Screening for precancerous cervical lesions	2939	2113.07	1.39
	Management of precancerous cervical lesions	179	1584.80	0.11
	Post-abortion care	406	633.92	0.64
	Participation in the medical visit	9921	6339.20	1.57
	Family planning/Short term	1139	2113.07	0.54
	Family planning/Long term	1318	1584.80	0.83
	Vaccination	3360	9508.80	0.35
A. Total number of midwives required for health service activities				**40.64**
Support activities performed by all members of the staff category	**Workload Components**	**Number of midwives performing the activities**		**Individual Allowance Standards (actual working time per person)**
	Audit of maternal deaths	0.25 day/year		**0.13**
	Supervision of trainee	1 hour/day		**12.5**
	Handover of service	90 minutes/day		**18.75**
	Service meeting	2 hours/month		**1.51**
Total Class Allocation Standards as a percentage				**32.89**

Continued

B. Class Allocation Factor: [1/(1-(Total Class Allocation Standards as a percentage)/100)]				1.49
	Workload Components	**Number of midwives performing the activities**	**Individual Allowance Standards (actual working time per person)**	**Individual Allowance Standards for one year (for all midwives carrying out the activities)**
Additional activities performed by some members of the staff category	Archiving	6	20 minutes/day	520
	Elaboration of vacation planning	4	1 hour/year	4
	Evaluation of trainees	4	4 hour/month	192
	On-call planning	4	1 hour/month	48
	Drafting of monthly reports	6	24 hours/month	1728
Total Individual Allocation Standards over one year				1492
Individual Allocation Factor: (Total Individual Allocation Standards over a year/Available Work Time)				**1.57**
Number of midewives required according to WISN; A*B+C				**62.23**

and maïeuticians (Table 2)against available staff of 57, meaning a shortage of 05 health workers.

During our study period, 75 midwives and maïeuticianswere on duty in University Hospital B. The estimated need for midwives and maïeuticiansby the WISN method was 75 midwives and maïeuticians (Table 3). The WISN ratio was 1.

University Hospital C had 87 midwives and maïeuticians staff. According to the WISN method, the required staff was estimated at 41 midwives and maïeuticians (Table 4).

There were 46 midwives and maïeuticians available in University Hospital D. According to the WISN method, the required staff was 24midwives and maïeuticians (Table 5).

Table 6 shows the number of staff and the WISN ratio per hospital. It allows us to appreciate the workload pressure in each hospital.

We note that it is only in hospital A that we find a lower workload pressure.

University A WISN ratio was 0.92, meaning a low work pressure of 8% (Table 6). Govule *et al.* [2] in Cameroon and Musau *et al.* [3] in Kenya, also found a shortage of midwives in their hospitals. In 2011, Ly *et al.* [4] reported a WISN ratio of 0.68 at Yalgado University Hospital and 0.79 at the Bogodogo medical center with surgical branch. From 2011 to 2019, there was a decrease in the work pressure of midwives and maïeuticians. This could be explained by the opening of two University Hospital in the city of Ouagadougou: the University Hospital of Bogodogo and the University Hospital of Tengandgo.

This workload pressure is relative since non-official staff (for example students,

Table 3. Estimated need for midwives and maïeuticians in university hospital B.

Available Working Time: 1598.4 hours				
	Workload Components	**Annual workload**	**Workload standard**	**Required number of midwives**
Health service activities performed by all midwives	Postnatal consultations	6640	2740.11	2.42
	Outpatient consultations	4640	2131.20	2.18
	Eutocic deliveries	87	399.60	0.22
	First Prenatal consultations	6917	2131.20	3.25
	Prenatal consultations 2 and more	1277	3196.80	0.40
	Dystocic deliveries	5306	319.68	16.60
	Emergency care of the newborn	269	2397.60	0.11
	Supervision and administration of care	11,217	1598.40	7.02
	Screening for precancerous cervical lesions	2835	2131.20	1.33
	Management of precancerous cervical lesions	31	1598.40	0.02
	Post-abortion care	506	639.36	0.79
	Participation in the medical visit	11,217	6393.60	1.75
	Family planning/Short term	1497	2131.20	0.70
	Family planning/Long term	1217	1598.40	0.76
	Dispensing at the hospital pharmacy	11,217	6393.60	1.75
A. Total number of midwives required for health service activities				**39.30**
	Workload Components	**Category Allocation Standards (actual work time)**		**Category Allocation Standards (percentage of time worked)**
Support activities performed by all members of the staff category	General Assembly	4 hours/year		0.25
	Audit of maternal deaths	2.5 hours/year		0.16
	Supervision of trainee	1 hours/year		12.5
	Handover of service	90 minutes/day		18.75
	Service meeting	2 hours/month		1.5
	Clinic Staff	5 hours/week		12.5
Total Class Allocation Standards as a percentage				45.66

Continued

B. Class Allocation Factor: [1/(1-(Total Class Allocation Standards as a percentage)/100)]				1.84
	Workload Components	**Number of midwives performing the activities**	**Individual Allowance Standards (actual working time per person)**	**Individual Allowance Standards for one year (for all midwives carrying out the activities)**
Additional activities performed by some members of the staff category	Archiving	6	20 minutes/day	520
	Elaboration of vacation planning	4	1 hour/year	4
	Registration of patients for dressing	1	5 hours/day	1300
	Evaluation of trainees	3	4 hours/month	144
	On-call planning	4	1 hour/month	48
	Drafting of counter-references	1	2 hours/month	24
	Drafting of monthly reports	7	24 hours/month	2016
Total Individual Allocation Standards over one year				4056
C. Individual Allocation Factor: (Total Individual Allocation Standards over a year/Available Work Time)				**2.54**
Number of midewives required according to WISN; A*B+C				**75.32**

Table 4. Estimated need for midwives and maïeuticians in university hospital C.

Available Working Time: 1612.8 hours				
	Workload Components	**Annual workload**	**Workload standard**	**Required number of midwives**
Health service activities performed by all midwives	Postnatal consultations	3979	2764.80	1.44
	Outpatient consultations	10,339	2150.40	4.81
	Eutocic deliveries	1896	403.20	4.70
	First Prenatal consultations	332	2150.40	0.15
	Prenatal consultations 2 and more	755	3225.60	0.23
	Dystocic deliveries	2596	322.56	8.05
	Emergency care of the newborn	213	2419.20	0.09
	Supervision and administration of care	6261	1612.80	3.88

Continued

	Screening for precancerous cervical lesions	1958	2150.40	0.91
	Management of precancerous cervical lesions	17	1612.80	0.01
	Post-abortion care	390	645.12	0.60
	Participation in the medical visit	6261	6451.20	0.97
	Family planning/Short term	767	2150.40	0.36
	Family planning/Long term	1599	1612.80	0.99
A. Total number of midwives required for health service activities				**27.19**
Support activities performed by all members of the staff category	**Workload Components**	**Number of midwives performing the activities**		**Individual Allowance Standards (actual working time per person)**
	Audit of maternal deaths	0.25 hours/year		0.02
	Supervision of trainee	1 hour/day		12.5
	Handover of service	90 minutes/day		18.75
	Service meeting	2 hours/month		1.49
Total Class Allocation Standards as a percentage				32.76%
B. Class Allocation Factor: [1/(1-(Total Class Allocation Standards as a percentage)/100)]				**1.49**
Additional activities performed by some members of the staff category	**Workload Components**	**Number of midwives performing the activities**	**Individual Allowance Standards (actual working time per person)**	**Individual Allowance Standards for one year (for all midwives carrying out the activities)**
	Archiving	2	20 minutes/day	173.33
	Elaboration of vacation planning	2	1 hours/year	02
	Evaluation of trainees	1	4 hours/month	48
	On-call planning	2	1hour/month	24
	Drafting of monthly reports	2	24 Hours/month	576
Total Individual Allocation Standards over one year				823.33
C. Individual Allocation Factor: (Total Individual Allocation Standards over a year/Available Work Time)				**0.51**
Number of midewives required according to WISN; A*B+C				**41.09**

Table 5. Estimated need for midwives and maïeuticians inuniversity hospital D.

Available Working Time: 1572 hours				
	Workload Components	**Annual workload**	**Workload standard**	**Required number of midwives**
Health service activities performed by all midwives	Postnatal consultations	159	2832.00	0.06
	Outpatient consultations	1389	2202.67	0.63
	Eutocic deliveries	896	393.00	2.28
	First Prenatal consultations	84	2096.00	0.04
	Prenatal consultations 2 and more	260	3144.00	0.08
	Dystocic deliveries	1378	314.40	4.38
	Emergency care of the newborn	396	2358.00	0.17
	Supervision and administration of care	4183	1572.00	2.66
	Screening for precancerous cervical lesions	120	2096.00	0.06
	Management of precancerous cervical lesions	15	1572.00	0.01
	Post-abortion care	534	628.80	0.85
	Participation in the medical visit	4183	6288.00	0.67
	Family planning/Short term	80	2096.00	0.04
	Family planning/Long term	199	1572.00	0.13
	Post-operation dressings	2185	4716.00	0.46
A. Total number of midwives required for health service activities				**12.55**
	Workload Components	**Category Allocation Standards (actual work time)**		**Category Allocation Standards (percentage of time worked)**
Support activities performed by all members of the staff category	Audit of maternal deaths	0.25 hour/year		1.53
	Supervision of trainee	1 hour/day		12.5
	Handover of service	90 minutes/day		18.75
	Service meeting	2 hours/month		1.53
	Clinic Staff	5 hours/week		12.5
Total Class Allocation Standards as a percentage				45.3
B. Class Allocation Factor: [1/(1-(Total Class Allocation Standards as a percentage)/100)]				**1.83**
	Workload Components	**Number of midwives performing the activities**	**Individual Allowance Standards (actual working time per person)**	**Individual Allowance Standards for one year (for all midwives carrying out the activities)**

Continued

Additional activities performed by some members of the staff category	Archiving	4	20 minutes/day	346.67
	Drafting of counter-references	1	2 hours/month	24
	Drafting of monthly reports	4	24 hours/month	1152
Total Individual Allocation Standards over one year				1522.67
C. Individual Allocation Factor: (Total Individual Allocation Standards over a year/Available Work Time)				**0.97**
Number of midewives required according to WISN; A*B+C				**23.79**

Table 6. Staffing and workload pressure analysis.

University Hospital	Workforce available	Required staffing	Difference	Situation (oversupply or shortage)	WISN Ratio	Workload pressure
University Hospital A	57	62	−5	shortage	0.92	Low
University Hospital B	75	75	0	Adequate	1	No
University Hospital C	87	41	46	Overflow	2.12	No
University Hospital D	46	24	22	Overflow	1.93	No

doctors in specialization) perform all the service activities of the midwives and maïeuticians.

In univesity hospital B, WISN ratio was 1. N'Guessan in Dakar [5] found a similar result for midwives in the principal hospital (ratio 1).

In 2011, Ly *et al.* [4] found a ratio of 0.79 for midwives and in amedical center with surgical branch. This shortage may be possible by a massive recruitment of health personnel during the transformation of the medical center with surgical branch into a university hospital in 2017.

In some African countries, there is a very uneven distribution between urban areas, which have a higher ratio of health professionals, and rural areas [6] [7] [8]. The University Hospital B is located in the second largest city in the country. When staff is assigned to an area, they tend to stay in the urban area of the region.

In univesity hospital C, the WISN ratio calculated was 2.12 (**Table 6**). There would therefore be an overstaffing of nearly 112%. This rate is comparable to that of Ly *et al.* [5] who found an overstaffing of 100% (WISN ratio = 2) at Kaya Regional Hospital. Our results are contrary to those of Shivam *et al.* [9] who reported a shortage of midwives in rural hospitals in India.

The calculated WISN ratio is 1.93 in University Hospital D. The University Hospital D has an overstaffing of 93% of midwives and maïeuticians. Thus, there

is no workload pressure. In India, Das *et al*. [10] noted a ratio of 1.38. Namaganda et al. in Uganda [6] had an overstaffing of midwives and maïeuticians of 25%.

This low ratio of the need for staff could be explained by an erroneous result of the actual volume of activities of the midwives and maïeuticians. In fact, during our data collection, we noted under-reporting of activities in the monthly activity reports. Under-reporting leads to an underestimation of the health care institution's staffing needs.

In addition, the University Hospital D receives only patients from the North region and sometimes from the Mouhoun loop region.

Non-attendace could also play an important role in workload. Although we did not investigate this aspect, it remains a real problem in public institutions. In Burkina Faso, Non-attendace affects 7% to 10% of health personnel (Ministerial Sector Board of Directors).

4. Conclusion

WISN allows evaluating the adequacy between the workload and the existing staff. When applied to the midwives and maïeuticians in the university hospitals of Burkina Faso, it revealed an over-staffing of midwives and maïeuticians in the two university hospitals of the country. A regional analysis of midwives and maïeuticians needs is advisable in order to allow for an equitable redeployment of midwives and maïeuticians through out Burkina Faso.

Conflicts of Interest

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

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