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Workload Indicator of Staffing Need (WISN) Technique Application in Primary Health Care Services in the Kingdom of Lesotho, 2022

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Abstract

Background: *Evidence shows that PHC-oriented health systems in countries are more likely to achieve more effective and satisfied patients, which leads to better and more equitable health outcomes. A planning approach that ensures adequate and sustainable resources to health needs is however required. The essence is that quality of health services in the PHC area relies heavily on the persons who work in them.*

Objective: *To develop and validate an instrument that verifies the interventions carried out by the primary health care providers as reference for understanding the workload pattern and for staff planning.*

Method: *descriptive and quantitative study, undertaken at a primary health care facilities in the district of Leribe of Lesotho. The set of sequential steps stipulated in the Workload Indicators Staffing Need method was employed: definition of the professional category, type of health services and calculation of available work time; definition of workload components; identification of mean time for workload components; determination of staffing requirements, and interpretation of the data.*

Results: *There was imbalance between the present personnel at the PHC sites studied and the midwife and nurse staffing need as revealed by the WISN approach in both health facilities. Maputsoe health center was short 33 nurses, indicating a high workload, while Matlameng health center has two extra nurses. Matlameng Health Center's midwife staffing displayed a balance, whereas Maputsoe Health Center is without two midwives, indicating a heavy burden for the current midwife staffing.*

Conclusion: *To determine components of the nursing and midwifery experts' workload in the primary health care area, it is relevant to apply the Workload Indicators of Staffing Need technique. It is recommended that WISN is a useful tool in primary and family health services to support access and universal health coverage.*

Keywords: Nursing and Midwifery Staff, Primary Health Care, Family Health Services, Workload

Introduction

Human resources are one of the cornerstones of accessibility and universal health coverage, but many African nations, including Lesotho, persistently struggle with this problem due to differences in their availability, composition, distribution, and productivity, especially in primary healthcare [1]. The health professionals play in the protection, promotion and restoring of public health [2, 3]. It is thus important to plan and invest in the development

of these professionals. It can help to systematically respond to the different and changeable health needs of the communities efficiently and effectively [4]. The planning process for health professionals therefore needs to consider a balance between what is available in terms of market and what is necessary to ensure the users' health demands.

The interventions and activities of nurses and midwives at family health centers in the context of primary healthcare have the capacity to affect and enhance public policies governing their norms and staffing practices [2, 3]. Most of the workforce in the Lesotho context's primary health care (PHC) delivery system consists of nurses and midwives (17.9%) and medical practitioners constitute only 2% [5, 6].

Even though there may be a link between nursing and midwifery staff density and rates of newborn, maternal, and child mortality and immunization, it has been necessary to determine how many professionals will be required to care for users at the primary health service units [7, 8, 3]. The World Health Organization's Workload Indicators of Staffing Need (WISN) technique, which has been suggested for staffing at a health institution, indicates tremendous potential relevance for primary healthcare units and in a districts' complete health service network [4, 2, 9]. It is important to analyze and figure out how much of the nurses' and midwives' total working time—direct and indirect—is spent on healthcare and other related and supplementary services on average.

By applying activity (time) norms that are appropriate to each workload component and to the free time of each cadre, the WISN departs from the workload [4, 9]. This approach yields information about the disparity between the actual and estimated numbers of nursing and midwife professionals, as well as the availability or scarcity of a particular professional category.

The purpose of the current assessment was however dual: 1) determination of an activity standard in context and, 2) to confirm the application of the WISN method in the predication of nursing and midwifery human resources at primary health care services with a focus on family health services because there is a lack of information to support the nursing and midwifery staffing situation in PHC in Lesotho.

Methodology

Both quantitative and qualitative data were gathered and analyzed in the investigation. According to the WISN recommendations, a series of operations were utilized in the quantitative analysis to determine the number of nursing and midwifery professionals working at the primary healthcare level [4, 9].

Study Setting

Lesotho is a small, mountainous, and landlocked country, surrounded by its much larger neighbor, South Africa. The rural population is not easily reached by information. It has a population of 2.2 million and nominal gross domestic product (GDP) per capita of $1,091 in 2021 [10, 11].

The current research focuses on the Leribe district, which has a total population of 302,664 people (147,851 men and 154,813 women), 13 constituencies, 13 community councils, and a geographical area of 2,828 square kilometers. The district population has only one general hospital that renders basic care and specialty perinatal and maternity care services [6]. Midwives, registered nurses, registered nurse-midwives, general practitioners, and obstetrician-gynecologists are available to attend all births [6]. The national guidelines state that until the patient can be transferred to a facility with specialty maternal care, the primary care facilities and healthcare providers are expected to appropriately cater essential health services and patient care [6, 12].

Two primary healthcare institutions (Matlameng and Maputsoe seven-day Adventist (SDA) health centers) were chosen through a convenience sampling in the Lesotho district of Leribe based on the standard of being the best primary healthcare practices. The two primary health centers oversaw rural communities.

The first facility visited was the Matlameng Health Centre, operated by the Government. It serves 28 villages with a catchment population of 43,211. The second facility visited during the exercise was the Maputsoe Seventh Day Adventist (SDA) Health Centre which is in the rural area of Leribe and serves 30 villages with a catchment population of 17,919. where care was provided Monday through Friday (from 8 Am till 16.30 hours). The coverage district was characterized by low-income living and working conditions, primarily rural communities. In the nearby areas, respiratory ailments, diarrheal illnesses, diabetes mellitus, and HIV/STIs were the most prevalent health issues.

Senior health system managers, individuals in charge of making choices involving human resources related to health, directors of health services, and professional bodies were informed of the study's relevance and potential benefits prior to its start. A half-day national level consultation meeting was held to inform the senior managers in the ministry of health. Senior officials oversaw the entire process, and a task group oversaw carrying out the WISN process.

The work team was made up of health teams that included midwives, nurses, and local health workers. A service manager and a nurse clinician for disease surveillance, health promotion, material sterilization, and a dispenser were present. In addition to these experts, a social worker, a lab technician, a dispenser, cleaning supplies, and a guard were present. A total of 40 hours were made available for employment each week (8 hours per day and 5 working days in a week). Qualitative method was used where in-depth interviews and observations were conducted with the health facility midwives and nurses working in both health centers on support and additional activities.

The goal was to concurrently identify the key variables for the two professional categories (nurses and midwives) in the two health centers using the stages outlined in the WISN technique. Findings were used to address current staffing challenges and how to staff future health services in context.

Steps of the WISN Technique

1. Determining the priority cadre(s) and health facility type(s) for applying the WISN method.

The priority care were nurses and midwives working in a health centre. The WISN method can be to all categories of health pro-

fessionals and all types of services. in the present study the nursing and midwife professional from two primary health care units were analysed.

2. Estimating available working time, defined as the time a health worker has available in one year to do their work, given authorized and unauthorized absences for leave, sickness, and so on. The Available Working Time (AWT) refers to how long a health professional has available, in one year, to perform his/her job, discounting established (holidays and vacation) and unexpected (medical leave and training) days of absence. It can be expressed as days or hours per year.

AWT = [A-(B+C+D+E] X F
Where:
AWT = available work time per professional
A = number of possible workdays in one year (obtained by multiplying the number of weeks in one year (52) by the number of workdays in one week).
B = number of days of absence due to holidays in one year
C = number of days of absence due to vacation in one year
D = number of days of absence due to medical leave in one year
E = number of days of absence due to other leaves, such as training, in one year
F = number of hours worked in one day.

3. Defining workload components, consisting of both health service activities and those supporting these activities (such as recording, reporting, and management meetings).

This step consists of defining the work interventions/ activities that occupy most of the professionals' daily time. The most important interventions/activities on a health professional's daily agenda are considered as workload components, knowing that each component needs a specific amount of time. The workload components corresponded to the interventions/activities the nursing professionals performed at the FHS, described in the data collection tool, and classified according to the WISN method, as follows:

- Health service activities – developed by all members of a professional category, which identifies the particularity of the work and are generally registered.
- Support activities – complement the health activities, developed by all members of a professional category, and generally are not registered.
- Additional activities – complement the health activities, developed by some members of a professional category and whose statistics are not registered regularly.

4. Setting activity standards, defined as the mean time necessary to perform an activity to acceptable professional standards in the local circumstances (identification of mean time for workload components). It consisted of the mean time needed for a trained, qualified, and motivated professional to develop an intervention/ activity with satisfactory competence/ skill and attitude, according to the conditions and circumstance of each service.

To identify the mean length of time the nursing staff spends to execute the interventions/activities that are the workload components, the time motion method was used. It involved non-participatory observation of 5-7 nurses and 3-5 midwives present at the service, during the eight-hour workday, every ten minutes, for five days (July 18 – 21 2022).

The interventions/activities observed were registered in the data collection tool, consisting of nursing and midwife interventions/ activities that were identified and validated for the primary health services, support activities and additional activities, by two previously trained field observers (separate for each group of cadres), who accompanied an obstetrician and public health specialists throughout the workday.

The mean length of the interventions/activities were calculated per workload component, specific for the two cadre. For the standard intervention/activity, that is, activities that are performed and registered routinely, the mean time was calculated based on the total time (in minutes) spent on each intervention/activity.

5. Establishing health service standard workloads (that is, the amount of work within a health service component that one health worker can do in a year). To adapt to the proposed WISN terminology, the health service activities were determined and documented in the data collection tool for each category. In this step, the lengths of time were expressed as actual work time in minutes. The mean lengths of the interventions found in this study were used according to the professional category (nurse and midwife) as staffing parameters.

6. Calculating allowance/adjustment factors to take account of the staff requirement of support activities performed by all or some of the staff for which there are no service statistics.

For the other two workload components, support interventions/ activities and additional interventions/ activities, whose statistics are not always available as they are not always registered, a mean length of time was calculated by adding up the frequencies (%) of the interventions observed plus the associated work activities, divided by the total number of observations in the period(6), thus adding the adjustment factor the WISN method calls: Category Allowance Standard (CAS) and Individual Allowance Standard (IAS), numerically expressed as Category Allowance Factor (CAF) and Individual Allowance Factor (IAF), respectively.

7. Determining staff requirements based on WISN by calculating the total staff required to cover both health service activities and activities supporting the services.

To staffing, the following procedure was adopted.

a) For the Health service activities: each workload component was divided by the AWT. This result showed the number of nursing staff needed per category to accomplish the workload component for the health service activities at the FHS.
b) For the support interventions/activities, the result of item a) was multiplied by the category allowance factor. This procedure revealed the number of staff needed for all Health service activities and complementary interventions/activities for the category.
c) For the additional interventions/activities, the IAF was calculated and added up to the results of items a, and b.

Thus,
staff need = health service activities X CAF+ IAF.

8.Analysing and interpreting the WISN results: difference and index

The difference between the number of staff available at the service and the staff needed was verified by analysing the WISN index between these two. When bordering on one (~1), the available staff is balanced with the staff demands for the workload at the service. An index superior to one (>1) evidence excess staff in relation to the workload and inferior to one (<1) that the current staff is insufficient to cope with the workload at the health service. Therefore, the lower the index, the greater the pressure at work.

Results

Setting Activity Standards for FH/PHC

Assessment of the activity standards used an observation and time-motion study by the technical and expert groups. Findings from the two primary health care facilities had marginal differences, however, result was averaged. The technical teams with the support of an expert team adopted and jointly endorsed the activity standards as follows (Table 1).

Table 1: Estimates of Activity Standards FH/PHC (health facility 1 & 2)

Workload components	Midwife profession	Mean time (min)*	Nurse profession	Mean time (min)*
Health services				
	Family planning	11	Immunization	12
	Antenatal care	35	IMCI	14
	Labour and childbirth	750	Home care	7
	Postnatal care	25	Consultations	200
Support activities				
	Recording and reporting	30 minutes in a day	Recording and reporting	30 minutes in a day
	Meetings	3 hours in a month	Meetings	3 hours in a month
	Health education	30 minutes in a day	Health education	30 minutes in a day
Additional interventions/ activities				
	Supervision of students and junior staff	1 hour in a week	Supervision of students and junior staff	8 hours in a month
	Continue education	5 hours in a week	Continue education	26.4 hours in a month
	General administration	3 hours in a day	General administration	1hour in a day
***Mean time estimate is based on SDA health facility**				

Determination of Workloads and Staffing needs in PHC Settings

Health Facility Name: Matlameng Health Centre

Tables 2 and 3—which list the workload components, the WISN method's suggested processes, and the data analysis and interpretation—determine the number of midwives and nursing professionals needed for the Matlameng Health Center based on the professional category.

Table 2: Determination of staffing requirement: Midwifery Profession (Health Facility 1)

Staff category: Midwife in Matlameng Health Centre in Leribe district					
Average available working hours in a day: 8 Available working days in a week: 5 Available working hours in a week: 40 Available working days in a year: 260 Days the staff was absent in a year = 46 Available work time in a year: 1712 hours (260-46) *8					
Total staff need for health service activities:					
Health service activities	Mean annual workload registered (previous year)	Mean time (min)	Number of interventions per hour	Annual workload (standard)	Need for staff category
Family planning	1772	11	5	8560 clients	0.21
Antenatal care	1095	35	2	3,424 clients	0.31
Skilled birth attendance	81	750	1	1712 clients	0.05

Postnatal care	121	25	1	1712 clients	0.16	
A. Total required midwives for health services activities					0.73	
Support activities	Workload component		CAS (actual working time)		Percentage working time (CAS%)	
	Recording and reporting		60 minutes in a day		12.5= (60/60/8) *100	
	Meetings		6 hours in a month		1.4 = [(2*12)/1712] *100	
	Health education		35 minutes in a day		7.3 = [35/60/8] *100	
Percentage of total category allowance standards (CAS)					21.2%	
B. Category allowance factors {1/ [1-(percentage of total CAS/100)]})]}					1.27 midwives are needed	
Additional intervention/activities of certain cadre members						
	Workload component		Number of staff members performing the work	IAS (actual working time per person)	Annual IAS* for all staff	
	Supervision of students and junior staff		1	1 hour in a week	52 hours	
	Continue education		3	5 hours in a week	780 hours (3*5*52)	
	General administration		1	3 hours in a day	780 hours (3*260)	
Total individual allowance standards (IAS) in one year (in hours)					1612 hours	
C. individual adjustment/allowance factor (IAS/total annual AWT)					1612/1712 = 0.94	
Total midwives required based on WISN (A*B+C)					1.6 = 2	
D. Data Analysis and Interpretation						
Professional category	Current number	Number needed	Shortage or surplus	Workload problem	index	Workload pressure
Midwife	3	2	+1	Excess	1.5	None

Table 3: Determination of staffing requirement: Nursing profession (health facility 1

Staff category: Nurse in a Matlameng Health Centre in Leribe district					
Average available working hours in a day: 8 Available working days in a week: 5 Available working hours in a week: 40 Available working days in a year: 260 Available work time in a year: 1712 hours					
Total staff need for health service activities:					
Health service activities	Mean annual workload registered (previous year) (a)	Mean time (min) (b)	Number of interventions per hour ©	Annual workload (standard) (d)	Need for staff category (a/d)
Consultations	11358	12	5	8560 clients	1.3
Immunization	6415	14	4	6848 clients	0.94
IMCI	11500	7	9	15 408 clients	0.75
Home visit	1712	200	1	1712 clients	1.0
A. Total required Nurses for health services activities					3.99 = 4
Support activities (health education, recording and reporting and morning meetings) and associated activity observed during the 5 days)			Workload component	CAS (actual working time)	Percentage working time (CAS%)

		Recording and reporting	30 minutes in a day	6.25= (30/60/8) *100	
		Meetings	3 hours in a month	2.1 = [(3*12)/1712] *100	
		Health education	30 minutes in a day	6.25 = [30/60/8] *100	
Percentage of total category allowance standards (CAS)				14.6%	
B. Category allowance factors {1/ [1-(percentage of total CAS/100)]})]}				1.17 Nurses are needed to do both service and support activities	
Additional intervention/activities of certain cadre members	Workload component	Number of staff members performing the work	IAS (actual working time per person)	Annual IAS* for all staff performing activity	
	Supervision of students and junior staff	1	8 hours in a month	96 hours	
	Continue education	2	26.4 hours in a month	633.6 hours	
	General administration	1	1 hour in a day	260 hours (1*260)	
Total individual allowance standards (IAS) in one year (in hours)				989.6 hours	
C. individual adjustment/allowance factor (IAS/total annual AWT)				989.6/1712 = 0.58	
Total midwives required based on WISN (A*B+C)				= 5.26	
D. Data Analysis and Interpretation					
Professional category	Current number	Number needed	Shortage or surplus	Workload problem	Index	Workload pressure
Nurses	3	5	-2	shortage	¾ = 0.75	High

Health Facility Name: Maputsoe Seventh Day Adventist (SDA) Health Centre

The second health facility investigated to ascertain the number of midwives and nurses needed to complete necessary tasks was MAPUTSOE SEVENTH DAY ADVENTIST Health Center. The workload components, the WISN method's suggested processes, and the data analysis and interpretation are all summarized in Tables 4 and 5. The staffing needs for the healthcare facility are now determined using the activity standards approved by the expert teams.

Table 4: Determination of staffing requirement: Midwifery profession (health facility 2)

Staff Category: Midwife in a Maputsoe (SDA) Health Centre in Leribe District					
Average available working hours in a day: 8 Available working days in a week: 5 Available working hours in a week: 40 Available working days in a year: 260 Available work time in a year: 1712 hours					
Total staff Need for Health Service Activities					
Health Service Activities	Mean annual Workload registered (previous year) (a)	Mean Time (Min) (b)	Number of Interventions per hour (c)	Annual Workload (standard) (d)	Need for Staff Category (a/d)
Family planning	850	11	6	8560 clients	0.10
Antenatal care	8573	40	2	3424 clients	2.5
Skilled birth	279	750	1	1712 clients	0.16
Postnatal care	797	25	3	3424 clients	0.23
A. Total required Midwives for health services activities					2.99 = 3

Support activities	Workload component	CAS (actual working time)	Percentage working time (CAS%)
	Recording and reporting	20 minutes in a day	4.2 = (20/60/8) *100
	Meetings	4 hours in a month	2.8 = [(4*12)/1712] *100
	Health education	35 minutes in a day	7.3 = [35/60/8] *100
Percentage of total category allowance standards (CAS)			14.3%
B. Category allowance factors {1/ [1-(percentage of total CAS/100)]})]}			1.17 Midwives are needed

Additional intervention/activities of certain cadre members	Workload component	Number of staff	IAS (actual working time)	Annual IAS* for all staff performing activity
	Supervision of activities	1	2 hours in a week	104 hours (52 weeks*2)
	Continue education	2	5 hours in a week	520 hours (2*5*52)
	General administration	1	3 hours in a day	780 hours (3*260)
Total individual allowance standards (IAS) in one year (in hours)				1,404 hours
C. individual adjustment/allowance factor (IAS/total annual AWT)				1404/1712 = 0.82
Total midwives required based on WISN (A*B+C)				4.33 = 5
D. Data Analysis and Interpretation				

Professional category	Current number	Number needed	Shortage or surplus	Workload problem	index	Workload pressure
Midwife	5	5	0	Balance	1.0	Normal

Table 5: Determination of staffing requirement: Nursing profession (health facility 2)

Staff category: Nurse in a Maputsoe (SDA) Health Centre in Leribe district					
Average available working hours in a day: 8 Available working days in a week: 5 Available working hours in a week: 40 Available working days in a year: 260 Available work time in a year: 1712 hours					
Total staff need for health service activities:					
Health service activities	Mean annual workload registered (previous year)	Mean time (min)	Number of interventions per hour	Annual workload (standard)	Need for staff category
Consultations	10296	12	5	8560 clients	2.0
Immunization	27364	14	4	6848 clients	15.9
IMCI	66360	7	9	15408 clients	9.7
Home care	1712	200	1	1712 clients	1.0
A. Total required midwives for health services activities					28.6 = 29

Support activities (health education, recording and reporting and morning meetings) and associated activity observed during the 5 days)		Workload component	CAS (actual working time)	Percentage working time (CAS%)
		Recording and reporting	60 minutes in a day	12.5= (60/60/8) *100
		Meetings	6 hours in a month	1.4 = [(2*12)/1712] *100

		Health education		35 minutes in a day	7.3 = [35/60/8] *100	
Percentage of total category allowance standards (CAS)					21.2%	
B. Category allowance factors {1/ [1-(percentage of total CAS/100)]})]}					1.27 midwives are needed	
Additional intervention/activities of certain cadre members						
	Workload component		Number of staff	IAS (actual working time)	Annual IAS* for all staff performing activity	
	Supervision of students and junior staff		2	8 hours in a month	192 hours (8*12*2)	
	Continue education		2	4 hours in a week	416 hours (2*4*52)	
	General administration		1	2 hours in a day	520 hours (2*260)	
Total individual allowance standards (IAS) in one year (in hours)					1128 hours	
C. Individual adjustment/allowance factor (IAS/total annual AWT)					1128/1712 = 0.66	
Total midwives required based on WISN (A*B+C)					37.49 = 38	
D. Data Analysis and Interpretation						
Professional category	Current number	Number needed	Shortage or surplus	Workforce problem	Index (wisn ratio)	Workload pressure
Nurse (clinical)	5	38	-33	Shortage	5/38 =	High

Analysis and Interpreting WISN Results

The findings from the WISN could provide evidence to policy makers and health managers to make informed decisions in the design of health workers distribution and development initiatives after an understanding of the local situation in terms of current staffing and workload norms. Appropriate analysis and interpretation of the WISN results have been done to ensure that they represent the staffing situation in context. Senior subject matter experts verified the activity standards and validated their applicability.

Challenges

The availability of regularly obtained annual services on the examined cadre and service workloads is a need for using the WISN approach. The degree of accuracy or quality of the service data and statistics in the national health information system determines the accuracy of the WISN technique. The team decided to consider the service data for the year prior to the set of COVID-19 after triangulating the data sources to limit the possibility of errors from the quality of the data. The effect is that inaccurate recording could undermine the results (over or under-estimating the workforce required by the facility) (2019). The study's team also observed that the year's lack of supplies and medications had no effect on the amount of work that health facilities had to do.

Discussion

To understand the service demand and staffing needs using the WISN technique, the current inquiry examined the staffing patterns for the midwife and nurse professions at two primary health care centers in the Leribe district of Lesotho. Based on time-and-motion analysis and direct inspections of work activities, activity standards were created. Calculating the number of workdays or hours available annually for each professional category gives a more accurate picture of the service's actual availability.

The findings indicated that there was an imbalance between the present personnel at the service being studied and the midwife and nurse staffing needs revealed by the WISN approach in both health facilities. The results showed that Maputsoe health center is short 33 nurses, indicating a high workload, while Matlameng health center has two extra nurses. Matlameng Health Center's midwife staffing displayed a balance, whereas Maputsoe Health Center is without two midwives, indicating a heavy burden for the current midwife staffing.

Support and extracurricular activities were typically seen by health professionals as time-consuming and unrelated to their job duties. However, to develop planning that supports the capacity of the health system when attending to the needs of the population, the study team realized the significance of precisely defining the interventions or activities that affect the workload of nursing and midwifery professionals in health care. The use of a tool like WISN, when tailored to the local environment, improves the distribution of staff numbers among services (Daian, & Pamela, 2016). It raises the quality of present and future health services, enables the identification of areas where there is a shortage of professionals, and provides information support for planning, training, and allocation at local, regional, and national level.

Conclusion

The use and evaluation of the WISN technique as an objective and systematic paradigm for midwife and nursing staffing in PHC constitutes the primary contribution of this study, which is unique in the Lesotho reality. Its use is crucial to pinpoint the elements of the workload for nurses and midwives. To support access and universal health coverage, it is therefore suggested as a tool for planning and qualitative and quantitative assessment of midwife and nursing professionals in family health care services.

The expert team is eager to point out that using WISN results in context can enhance numerous aspects of workforce planning and management. In terms of tackling present issues and upcoming healthcare services, it is crucial to compare the service quality to the WISN ratio as part of the decision-making process. While health centers with high ratios might be urged to enhance performance using their ample time, those with low ratios may choose to reduce corners.

The study team has faith that WISN data, together with a thorough analysis of local staffing conditions, would be able to solve the scarcity and inequality of health personnel in the primary health care system. Applying the WISN procedures across comparable health facilities in the same administrative area (district) can assist evaluate and improve staff distribution, ease workload pressure, review and align task distributions between cadres, and improve the caliber of present and future health care services.

The teams add that a more extensive use of the WISN methodology could aid in better planning and managing the health workforce between hospitals and primary care facilities in the same district. Additionally, the health services could employ the WISN method to calculate the number of medical specialists needed for a variety of situations, including staff adjustments in response to initiatives like the new essential health service package, decentralization, or reorganization of primary care services.

Declaration Section

Ethical Approval and Consent: There was no requirement for an informed consent as there was no direct contact with study participants. However, we got approval from the Bureau of statistics and ministry of health for the use of the government data and reports (open access data on the government website, DHIS2).

Consent to Publish

Not Applicable

Conflict of Interest

The authors declare that they have no competing interests.

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Author's Contribution

Mesfin contributed to the conceptualization of the study, data analysis and manuscript writing. The rest of the team contributed to data clearing and manuscript writing. All the authors read and approved the final manuscript.

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