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Antiretroviral therapy program accessibility across Lesotho districts' primary health care centers

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ABSTRACT: Most of patients in Lesotho receive health care in primary health care (PHC) facilities which are mostly managed by nurses. PHC facilities, which comprise health center facilities, are settings at which basic health care services (including antiretroviral therapy (ART)) which are affordable and accessible are targeted towards individuals, families, communities or groups. In Lesotho, antiretroviral therapy was initiated in 2001 and the free ART program started in November 2004. As the prevalence of HIV/AIDS remains high in Lesotho (25%), not much is known about the accessibility of the ART program in these settings. The aim of this study was to evaluate the ART program accessibility in PHC settings of Lesotho. A cross-sectional survey was conducted from September to November 2015 and quota sampling was used to select nurses involved in the program. A structured self-report questionnaire was used to collect data from 197 respondents and it was analyzed using SPSS version 23. It was found that 100% of PHC facilities were managed by registered nurses, registered nurse midwives or nurse clinicians and their professional titles did not affect service provision. The nurses spent an average of 4.6 (CI=3.5-4.9) years at the PHC facilities and had an average of 9.7 (CI=8.5-11.4) years in clinical practice. The mean number of patients was 173 (CI=138-175) and they spent on average 2.7 (CI=2.4-3.0) hours seeking the services. ART and prevention of mother to child transmission (PMTCT) services were accessible and offered for 4.5 (CI=4.4-4.7) days every week, but not offered on the same days and in the exact same manner. This was due to nurses' different preferences resulting from differing staffing patterns and workload. In order to improve the current situation, standardized ART service delivery, driven by coordinated services offered on similar days and performed by staffing patterns in line with patient numbers should be encouraged.

Keywords: ART accessibility, health center, HIV, Lesotho, nurse, primary health care.

INTRODUCTION

Antiretroviral therapy (ART) is lifelong medical treatment used in the management of HIV/AIDS. Lesotho is one of the few countries allowing antiretroviral therapy (ART) initiation by registered nurses due to the scarcity of medical doctors (Labhardt et al., 2013). This strategy improved ART coverage and is effective and feasible to implement ART as the majority of patients receive health care in primary health care (PHC) settings; these health center facilities are located variously across the country and mostly managed by nurses. Building on past achievements and improving access to ART could set Lesotho towards achieving fast track targets to end Human Immunodeficiency Virus (HIV) infection / Acquired Immunodeficiency Syndrome (AIDS) by 2030. PHC goal is to reduce exclusion and social disparities in health, organize health services around people's needs and expectations, integrate health into all sectors, pursue collaborative models of policy dialogue and increase stakeholder participation (WHO, 2008).

Of the 36.9 million people living with HIV (PLWH), a large proportion of them (21.7 million) were on ART as of 2017 (UNAIDS, 2018). The recommendation by the World Health Organization (WHO) to shift the task of HIV care to nurses, particularly in resource-limited settings, may partly

accounts for the large proportion of PLWH on ART (Monti et al., 2015). In response, national guidelines were published in Lesotho to start a nurse-based model of HIV care and decentralize ART services (Labhardt et al., 2013). This strategy was applied in many other sub-Saharan African countries including Botswana, South Africa, and Cameroon and in Mozambique, task shifting resulted in increased access to ART, reduction of physician workload and a reduction of patient waiting times (Rustagi et al., 2015).

ART is the best choice for treatment of HIV as it significantly improves the health of PLWH (Nyangu and Mokwena, 2015). Retaining patients in care shows progress towards achieving the UNAIDS 90-90-90 targets (UNAIDS, 2018) and has been reported to result in viral load suppression (Brown et al., 2016). Using middle and lower level health care professionals in place of physicians has been successful and resulted in better access and sustainability of health care services in rural communities of Ethiopia (Assefa et al., 2012). Patients enrolled in nurse-led ART achieved substantial improvements in immune function over a short period of time (Schexnayder and Baernholdt, 2014). More attention should, therefore be given to preventing the development of opportunistic infections in patients managed in PHC settings (Schexnayder and Baernholdt, 2014).

Several other studies reiterate the findings of the use of nurses for the provision of ART in resource-limited settings. For instance, HIV care by sufficiently proficient nurses did not reduce the quality of care and resulted in reduced numbers of patients lost to follow up (Kredo et al., 2014). Increasing the responsibilities of nurses to include ART services is safe and resulted in better outcomes and quality of care (Fairall et al., 2012). Using nurse-driven mentorship programs allowed treatment initiation of most patients and improved their confidence in performing HIV-related clinical tasks, therefore giving doctors more time to deal with compound cases (Green et al., 2014).

Anecdotal evidence suggests differences in the implementation of the ART program across districts in Lesotho. Services are reportedly not offered in a similar manner across the many PHC settings in the country. Nurses have also been reported not to follow standard operating procures and infection control whilst administering ART (Ndou et al., 2016). Maintaining and improving ART program accessibility remains crucial in achieving 95-95-95 targets, towards ending the HIV/AIDS epidemic by 2030. Nurses are key implementers of the ART program in resource-limited countries such as Lesotho. However, evidence on the accessibility of the program across the various districts of Lesotho from their perspective remains limited.

Thus, the objectives of the study were to: access the number of days on which ART and prevention of mother to child transmission (PMTCT) services were offered; measure the time it takes for ART and PMTCT services to be provided; determine if professional title had an association with either the number of days ART and PMTCT services were offered, number of patients seen or the time it takes for ART and PMTCT services to be provided.

MATERIALS AND METHODS

Ethical considerations

The benchmarks for ethical research according to Emanuel et al. (2004) were used to guide ethical principles in this study and included collaborative partnership, social value, scientific validity, a fair selection of study population, favorable risk-benefit ratio, independent review, informed consent and respect for recruited participants and study communities.

Permission to undertake the study was sought and granted from the Higher Degrees Ethics Committee at the University of South Africa (REC-012714-039) and Lesotho Ministry of Health (REC-ID136-2014). Participants gave informed consent to acknowledge their voluntary participation in the study. Only codes were used to identify study participants and those who declined to participate or withdrew from the study were treated in a non-prejudicial manner. There were no implicit or explicit threats of penalty from failing to participate or excessive rewards from agreeing to participate. Participants could ask questions, refuse to provide information or withdraw from the study without any prejudice on their employment status.

Study design

A descriptive quantitative study using a cross-sectional survey was conducted. Data was analyzed at one specific point in time.

Sampling

The study population included nurses providing ART services in the primary health care setting in Lesotho. Quota sampling was used to select health center facilities across the districts of Maseru urban, Maseru rural, Berea, Butha Buthe, Mafeteng and Thaba Tseka. Figure 1 shows the distribution of PHC facilities, ecological zones, and districts of Lesotho. There are 160 health center facilities within Lesotho and an average of three nursing personnel working at each facility. Therefore, there were 480 nursing staffs serving the health center facilities. Convenience sampling was used to select nurses working in PHC facilities in six districts of Lesotho. A sampling frame was derived from human resource registers for registered nurses working at PHC facilities in Lesotho. Raosoft (Raosoft.com, 2015) sample size calculator was used to estimate the sample size and it was 214.

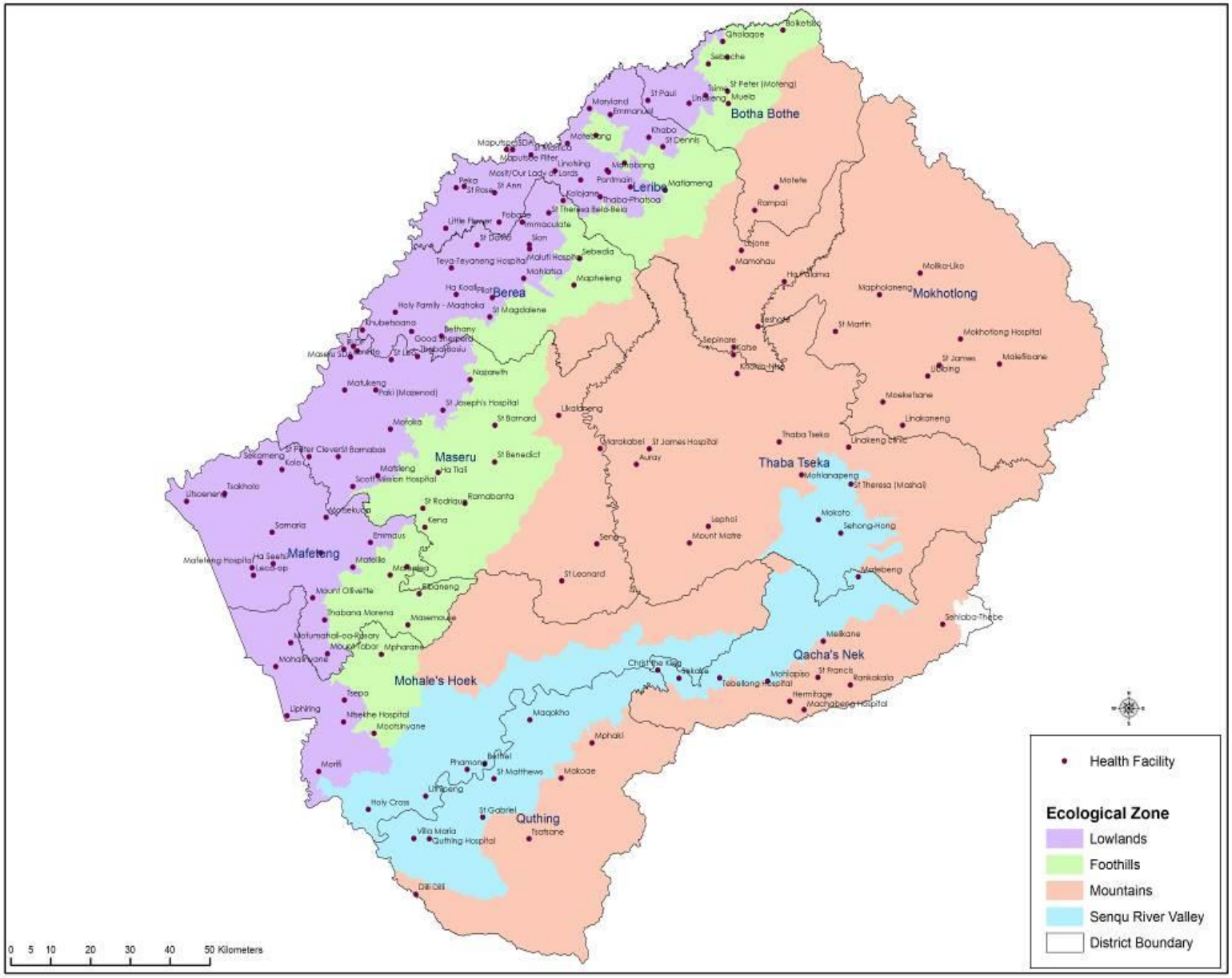

Figure 1. Map of Lesotho health centre facilities, ecological zones and districts (Source: National University of Lesotho Geography Department).

Data collection

A semi-structured self-report questionnaire developed by the researchers was used to collect data. All questions on the data collection tool were used in the discussion of this paper. Data collection took three months from September to November 2015. Nurses were introduced to the researchers and study and asked to participate before starting their monthly PHC planning meetings.

A pre-test on eight nurses who were not part of the actual study was conducted to ascertain the relevance of items on the questionnaire (content validity) and Cronbach's alpha coefficient was used to measure internal consistency (0.785). To ensure criterion-related validity, the researchers set a criterion of professional title against number of days ART and PMTCT services were offered, number of patients seen, and time it takes for ART and PMTCT services to be provided. Results of the pre-test generally confirmed the results in this study. The researchers concluded that the data collection instrument was user friendly as the pre-test participants were able to answer it independently; the instructions were clear to follow and comments were made in spaces provided; all questions were clear as none of the participants asked for clarifications during the pre-test phase; and it took 15 to 20 minutes to complete the questionnaire and the researcher felt this time was adequate to allow participants to respond to all questions.

Data analysis and management

SPSS (23) was used to analyze data. The compliance rate was 92%, with 197 participants out of the expected 214 responding to the questionnaire. Kruskal Wallis ANOVA (KWA) was used to analyze data as the samples were not randomly selected. Post hoc analyses were conducted using the Mann-Whitney U (MWU) test. Professional title was analyzed using Spearman rho correlation coefficient to determine if it was associated with the number of ART (including PMTCT) patients seen, time spent seeking and providing ART services, the number of days ART and PMTCT services were offered at facilities across the districts. Data were managed electronically and hard copies of questionnaires were kept in locked cupboard and only accessible to the researchers for purposes of the study.

RESULTS

Site characteristics

Of all eligible PHC facilities, data was collected from 40% (n=64) of 160 facilities. Figure 2 shows the distributions of PHC facilities surveyed in each district. Of all eligible participants, 96% (n=189) provided information on the ownership of their facilities. Figure 3 shows the ownership of the PHC facilities used in this study. It was concluded that the number of ART (including PMTCT) patients seen differed significantly across the categories of health facility ownership (p = 0.01; α = 0.05). Patients were higher in government facilities than private facilities (U = 197.5; p = 0.001) and in church facilities than private facilities (U =204.5; p < 0.001). The total number of participants was 197 from the six districts. Figure 4 shows the distribution of participants from each district.

Participant characteristics

Ninety-nine percent (n=195) of the participants provided information on their gender. Seven percent (n = 14) of the participants were males and 92% (n = 181) were females. Sixty-four percent (n=126) of the participants provided information on their age. Table 1 shows the age distribution of the participants.

Profession

In total, 9% percent (n = 17) of the participants were registered nurses, 72% (n = 142) were registered nurse midwives and 19% (n = 37) were nurse clinicians. There was no association between professional title and the number of ART (including PMTCT) patients seen at the facilities (r_s[197]= -0.055; p = 0.453), time spent seeking ART services (r_s[197]= 0.047; p = 0.508), time spent providing ART services (r_s[197]= 0.078; p = 0.274), number of days ART services were offered at facilities (r_s[197]= 0.025; p = 0.072) and number of days PMTCT services were offered at facilities (r_s[197]= -0.063; p = 0.377). It was therefore concluded that professional title did not affect ART service provision.

Number of years at the facility

Table 2 shows the distribution of the number of years spent at facilities by the professionals. The number of years spent at facilities by the participants differed significantly across the districts (p = 0.01; α = 0.05). Higher numbers of years at facilities were in Maseru than Mafeteng (U = 163; p = 0.012), Maseru than Qacha`s Nek ($U$ = 83; $p$ = 0.04), Qacha`s Nek than Thaba Tseka (U = 15.5; p = 0.022), Maseru than Berea (U = 236; p = 236), Berea than Butha Buthe (U = 67; p = 0.04), Berea than Thaba Tseka (U = 27; p < 0.001).

Number of years in clinical practice.

Table 3 shows the distribution on the number of years spent in clinical practice. There was no significant

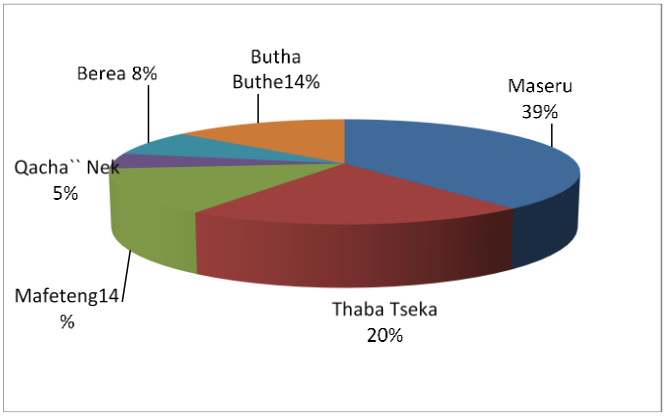

Figure 2. Distribution of PHC facilities used per district (n=64).

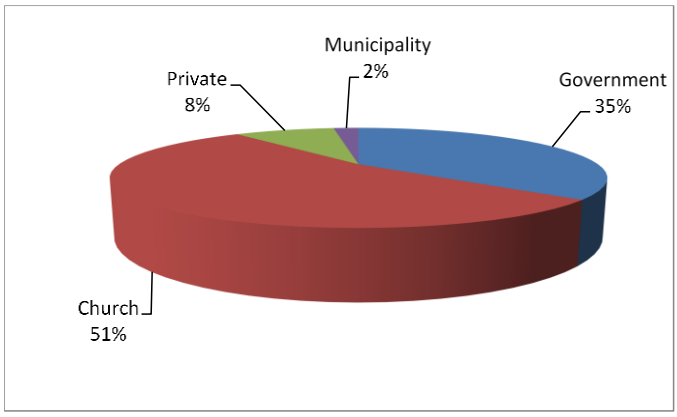

Figure 3. PHC facility ownership (n=189).

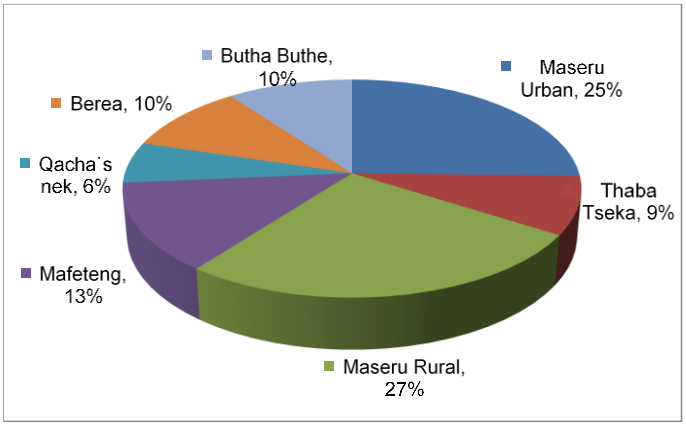

Figure 4. Participants included in the study per district (n=197).

difference in the number of years spent in clinical practice across the districts (p = 0.73; α = 0.05). However, years spent in clinical practice were higher in Maseru than Mafeteng (U = 163; p = 0.012), Mafeteng than Qacha`s Nek (U = 22.5; p = 0.046), Mafeteng than Berea (U = 59; p = 0.046), Maseru than Thaba Tseka (U = 153.5; p = 0.039).

ART patients (including PMTCT) consulted

Participants reported the number of ART (including PMTCT) patients seen to be ranging from 10 to 600 per week. Table 4 shows the distribution of the number of patients consulted. There was a significant difference in the number of ART (including PMTCT) patients seen at facilities across the districts. Numbers of patients consulted were higher in Maseru than Qacha`s Nek ($U$ = 166; $p$ = 0.017), Maseru than Mafeteng ($U$ = 380; $p$ = 0.003), Mafeteng than Thaba Tseka ($U$ = 96.5; $p$ = 0.014), Qacha`s Nek than Thaba Tseka (U = 38; p = 0.017).

Days per week ART (Including PMTCT) services were offered

Participants reported the number of days per week ART (including PMTCT) services were offered to be 1 to more than 5 days. Table 5 shows the number days ART (including PMTCT) services were offered per week. Age of participants (r_s[126]= 0.278; p = 0.002) and years spent in clinical practice (r_s[149]= 0.280; p = 0.001) were found to be associated with number of days ART services were offered. Services were likely offered on more days by older participants and nurses who spent more years in clinical practice. The number of days ART (including PMTCT) services were offered differed significantly across the districts. Days were higher in Maseru than Thaba Tseka (U = 260; p = 0.005), Mafeteng than Butha Buthe (U = 188; p = 0.027), Mafeteng than Berea (U = 162; p = 0.003), Mafeteng than Thaba Tseka (U = 129; p = 0.01), Qacha`s Nek than Thaba Tseka (U = 44; p = 0.009), Berea than Thaba Tseka (U = 63; p = 0.001), Butha Buthe than Thaba Tseka (U = 76; p = 0.004). Participants did, however, comment that there was too much paperwork involved in the provision of ART services.

Days per week PMTCT services were offered

Table 6 shows the number of days on which PMTCT services were offered. The numbers of days per week PMTCT services were offered differed significantly across districts. Days were higher in Maseru than Qacha`s Nek ($U$ = 189; $p$ = 0.039), Mafeteng than Butha Buthe ($U$ = 126; $p$ = 0.001), Mafeteng than Berea ($U$ = 152; $p$ = 0.006), Qacha`s Nek than Butha Buthe (U = 24; p < 0.001) and Butha Buthe than Thaba Tseka (U = 106; p = 0.052).

Time spent seeking ART services

Table 7 shows the time patients spent seeking services.

Table 1. Age distribution of participants (n=126)

Age groups	True limits	Mid-age (×)	Frequency (*n*)	∑f×	%
20-29	19.5-29.5	24.5	36	882	29
30-39	29.5-39.5	34.5	54	1863	43
40-49	39.5-49.5	44.5	18	801	14
50-59	49.5-59.5	54.5	14	763	11
60-69	59.5-69.5	64.5	4	258	3
Total			∑*n* = 126	∑f× = 4567	100

Mean ($\dot{x}$) = 36 (CI = 34.8 - 38.3); SD = 9.8.

Table 2. Number of years spent at facility (n=156).

Groups	True limits	Frequency (*n*)	Mid-year (*x*)	f×	%
1-5	0.5-5.5	128	3	384	82.1
6-10	5.5-10.5	19	8	152	12.1
11-15	10.5-15.5	3	13	39	2.0
16-20	15.5-20.5	1	18	18	0.6
21-25	20.5-25.5	4	23	92	2.6
26-30	25.5-30.5	1	28	28	0.6
Total		∑*n* = 156		∑f× = 713	100.0

Mean ($\dot{x}$) = 4.6 (CI = 3.5-4.9); SD = 4.7; KWA: $p = 0.01$ $\alpha = 0.05$.

Table 3. Number of years spent in clinical practice (n=149).

Years in groups	True limits	Frequency (*n*)	mid-year (*x*)	f×	%
1-5	0.5-5.5	65	3	195	44%
6-10	5.5-10.5	39	8	312	26%
11-15	10.5-15.5	10	13	130	7%
16-20	15.5-20.5	13	18	234	9%
21-25	20.5-25.5	10	23	230	7%
26-30	25.5-30.5	11	28	308	7%
31-35	30.5-35.5	1	33	33	0%
Total		∑*n* = 149		∑f× = 1442	100%

Mean ($\dot{x}$) = 9.7 (CI = 8.5 -11.4); SD = 8; KWA: $p = 0.73$; $\alpha = 0.05$.

Table 4. Number of ART (including PMTCT) patients seen (n=186).

Groups	Frequency (*f*)	mid Class (×)	f×	%
0-99	76	49.5	3762	40%
100-199	52	149.5	7774	28%
200-299	28	249.5	6986	15%
300-399	6	349.5	2097	3%
400-499	18	449.5	8091	10%
500-599	5	549.5	2747.5	3%
600-699	1	649.5	649.5	1%
Total	∑f = 186		32107	100%

Mean ($\dot{x}$) = 172.6 = 173 (CI = 138 - 175); SD = 129; KWA: $p = 0.035$; $\alpha = 0.05$.

Table 5. Number of days ART (including PMTCT services offered (n=197).

Days	% Response
1	3
2	6
3	6
4	8
5	71
>5	6

Mean ($\dot{x}$) = 4.5 (CI = 4.4 - 4.7); SD = 1; KWA: $p < 0.001$: $\alpha = 0.05$.

Table 6. Number of days PMTCT services offered (n=194).

Days	% Response
1	8
2	24
3	7
4	5
5	54
>5	2

Mean ($\dot{x}$)= 3.8 (CI = 3.6 - 4.0); SD = 1.6; KWA: $p < 0.001$; $\alpha = 0.05$.

Table 7. Time spent seeking ART services (n=174).

Time in hours	% Response
½	45
1	20
2	21
3	4
4	7
>4	3

Mean ($\dot{x}$) = 2.7 (CI = 2.4 - 3.0); SD = 2; KWA: $p = 0.002$; $\alpha = 0.05$.

The average time spent by an individual seeking ART services differed significantly across the districts. The time spent seeking ART services was higher in Maseru than Thaba Tseka ($U = 270$; $p = 0.021$), Maseru than Qacha`s Nek ($U = 84$; $p < 0.001$), Mafeteng than Qacha`s Nek ($U = 60$; $p = 0.002$), Qacha`s Nek than Berea ($U = 36$; $p = 0.001$), Qacha`s Nek than Thaba Tseka ($U = 54$; $p = 0.034$), Berea than Thaba Tseka ($U = 102$; $p = 0.039$) and Butha Buthe than Thaba Tseka ($U = 88.5$; $p = 0.012$). Participants did also comment that it was possible for patients to experience long waiting periods due to inadequate human resource and the tedious documentation in many registers which did consume time. Adherence counseling and counting of the ARVs was also done during the same visit.

DISCUSSION

PHC plays a vital role in the decentralization of health services to all populations in need of such services. In Lesotho, PHC is mostly delivered in the health center facilities which are disproportionately distributed across the country. The topography of Lesotho remains a challenge in allowing accessibility of health facilities as it is mostly mountainous with poor road infrastructure. Factors hindering access to appropriate health care services included poorly located facilities, inability to meet demand and inadequate infrastructure including equipment (Bekker et al., 2014). The majority of PHC facilities were seen to be staffed by registered nurse midwives and nurse clinicians. This finding in line with the South African Nursing Council (SANC, 2016) which reported a total population of 136,854 registered nurses on their roll, which was a rise of 35% in the preceding 10 years. Most of the participants spent between 1 to five years at their facilities, had between 1 to 10 years in clinical practice and were aged between 20 to 49 years. SANC (2016) reported majority of the nurses to be aged between 30 to 59 years. Older nurses and those who spent more years in clinical practice were found to offer services on more days. In order to provide better care and treatment of ART patients it is of utmost importance for more support in nurse capacity building so as to reduce current existing gaps (Smith et al., 2016).

In this study, nurses professional title (grade) was not associated with service provision, hence supporting the notion that nurse-led case management programs had a role in improving HIV-related health outcomes, patient retention on ART and were associated with successful viral suppression (Chen, 2014). Lesotho is one of the few countries that permitted initiation of ART by registered nurses owing to the scarcity of medical doctors, a move that has seen a great increase in the coverage of ART.

There was a large variation in the number of ART patients seen at facilities across the districts. This supports the fact that Lesotho has the third highest HIV prevalence of 25% (Ministry of Health Lesotho and ICF International, 2014) in the world. Currently, there are 320,000 adults and children living with HIV, of which 233,131 are receiving ART treatment, and 1,900 new HIV infections have been averted due to PMTCT (UNAIDS, 2017). This high ART acceptance in the country is commendable although more effort is necessary to further improve service provision. Results showed that the Maseru district had the highest number of patients seeking ART whilst Thaba Tseka had the least number of patients. This could be attributed to the fact that Maseru district is the largest city in Lesotho and therefore a large proportion of the population lives there due to the existence of employment and educational services. More patients were seen in government and church owned facilities as they are more in number and found across all districts as compared to the municipality or private facilities.

In this study, great variation was also noted in the number of days ART and PMTCT services were offered across the districts (from one to more than five days per week). Each district was offering services depending on

individual preferences. Too much paperwork was reported as a challenge that affected the number of days on which services were offered and this could also allude to number of staff available. Uys and Klopper (2013) recommended that at least one specialist nurse, five registered nurse midwives, and four enrolled nurses were needed for the effective running of PHC settings (Uys and Klopper, 2013). Continued support for nurses is necessary to ensure effective implementation of the ART program in resource limited settings (Mavhandu-Mudzusi et al., 2017). Variations in the implementation of the ART program in South Africa have also been reported as a result of unduly located poor infrastructure, the inability of the health system to meet demand and maintain quality, and inadequate human resources, which resulted in increased waiting times and poor staff attitudes (Bekker et al., 2014).

Results showed that a majority of the participants reported that it takes 30 minutes to two hours to provide ART services. There was great variation between districts in the time spent by patients who sought services at the facilities (from 30 minutes to more than 4 hours). Participants did, however, allude to the shortage of staff and tedious documentation as challenges that affected time spent by patients at facilities. This finding is consistent with the finding of Mack et al. (2015) who reported various human resource challenges and they included increased workload, insufficient personnel, the need for task shifting/sharing, training needs, infrastructural requirements, discrimination and stigma by staff towards at-risk clients. Patients were also exposed to services of adherence counseling and pill counts during the same visit indicating an attempt towards comprehensive services. In other studies, patients were reported to wait for long periods before accessing ART services and were tired of having to climb stairs to reach the ART center upstairs and did not have enough seating space (Patel et al., 2012). Waiting times and cleanliness were also challenges in the delivery of health care services (Bekker et al., 2014).

Conclusions

With its health care system mainly delivered by PHC facilities, which are disproportionately distributed across the country, Lesotho has achieved greater coverage of health services through a shift from a doctor-led to nurse-led ART service provision. The majority of PHC facilities were managed by registered nurse midwives and nurse clinicians and their professional titles did not affect service provision. Many patients were reported to seek ART services including PMTCT, thus suggesting not only a high prevalence of the disease in the country but high coverage of ART services. ART services were offered on different days across the districts, an observation that needs to be addressed to ensure improved and equitable accessibility of ART and PMTCT services. Patients spent variable time at facilities seeking ART services depending on other services that had to be offered, shortages of staff and workload. As nurses continue to play a pivotal role in the provision of ART services, there is a need to provide further support especially in terms of staffing to address staff shortages and reduce patients waiting times at facilities.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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