

The Training Experience and Professional Expectations of Allied Health Workers Students in Angola

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Abstract

Background

We describe the profile of Angolan final year allied health workers (AHW) students: where they come from, their experience of training and expectations regarding professional future.

Methods

It was a questionnaire based observational cross-sectional study applied to final year AHW students in 24 public and private sector, higher and mid-level training institutions in 14 of the 18 provinces of Angola during 2014.

Results

Most AHW students were women, satisfied with their choice of training. Satisfaction with teachers was high but low regarding support systems such as access to library, laboratories and clinical cases.

After training AHW students wanted to settle in Angola, preferable in hospital practice, preferably in the public sector and in a national or provincial capital, rather than in the municipal hospitals.

Conclusions

This study highlights some of the issues that will have to be addressed by training institutions in order to contribute to a balanced health workforce in Angola, with AHW in quantity with the quality and distribution necessary to address health system and population needs. It highlights the importance of private education institutions in meeting this need. As training is a significant investment by students or their relatives, training institutions must strive to improve support systems in terms of access to libraries, laboratories, clinical cases, informatic support, canteens, accommodation and leisure activities.

Background

As a fragile state¹, Angola ails from a 'paradox of abundance'^{2,3} on the one hand and a severe shortage of health workers, including allied health workers (AHW), on the other⁴. The responses to the country's health workforce needs have been guided by a National Health Development Plan⁵, successive Human Resources Development Plans^{6,7} and a National Staff Training Strategy (Estratégia Nacional de Formação de Quadros - ENFQ)⁸ and its corresponding National Staff Training Plan.⁹

AHW in Angola are associated with a specific career. The AHW career includes 28 professional groups (Audiology, Cardio-pneumology, Clinical and public health analysis, Clinical psychology, Defectology, Dental prosthesis, Electromedicine, Environmental health, Genetics, Hygiene and Epidemiology, Laboratory biology, Medical statistics, Neurophysiology, Nuclear Medicine, Nuclear physics, Nutrition and dietetics, Occupational therapy, Oral Hygiene, Orthoprosthesis, Orthoptics/ophthalmology, Pathological/cytological

and thanatological anatomy, Pharmacy, Physiotherapy, Podology, Radiology, Radiotherapy, Speech therapy, Stomatology). Unlike what is observed in other countries, pharmacists do not have a different career path and integrate the AHW career. These professions may have up to three levels of training (auxiliary, mid-level and higher education) and may evolve over stages: 3 for auxiliaries, 4 for mid-level AHW or six for higher education. The career is regulated by a national council for all the 28 professional groups (Conselho Nacional dos Técnicos de Diagnóstico e Terapêutica de Angola -CNTDTA); pharmacists integrate the CNTDTA through a representative of their own independent Council. Existing legislation dates from 2018 and improves on previous legal rules from 1997¹⁰. But the roots of the career data back to colonial times. A 1844 decree, followed by another in 1845, laid the legal basis for the creation of an institute for the preparation of “health practitioners” in Luanda, with competences in nursing and in “small medicine”. The first Nursing Assistants, Attendants and Practitioners Training School at Hospital Maria Pia (now Josina Machel Hospital) in Luanda, dates from 1883. This training was formalized with the setting up of the Technical School of Health and Assistance Services in Luanda in 1967 and in 1969 in Huambo (then Nova Lisboa). In 1970, the Portuguese Government created, in the Cota Municipality of Malanje, the Rural Health Assistance Agents Training School. Christian churches also played a relevant role at the local level in the training of health professionals through schools and health facilities associated with their missionary activity. This contribution has not yet been studied in a systematic way.¹¹⁻¹³

After independence, in 1976, twenty-two Technical Schools were created in all 18 provinces, mostly with the objective of massifying the training of nursing assistants. During 1979 the training of promoters of occupational and rural health was also intensified throughout the national territory. The MoH also begun with the specialization of nursing assistants in several areas including physical rehabilitation. In 1982 several Midlevel Institutes of Health (MIH) were created. The mid-level technical nursing course was created in 1982 at Bié’s MIH. With the adoption of the first HRH Development Plan (1997–2007), the transformation of technical and professional education in health underwent a new impulse. Basic training was interrupted and schools offering basic training were converted into Provincial Recycling Centers. The regionalization of training was initiated with the progressive transformation of MIH and Provincial Technical Schools into institutions with regional scope called Technical Health Professional Schools (TPHS). These concentrated on promotion courses for assistant technicians and specialization for midlevel professionals already in the system.^{6,11-15}

In the current situation, health professionals are trained at the tertiary level (in universities and, for nurses and AHW, polytechnical institutes) and at the mid-level (in THPS), both in the public and private sectors. The higher education accredited course for AHW include (2015) clinical and public health analysis, clinical psychology, electromedicine and pharmacy in the public sector and cardio-pneumology, clinical and public health analysis, clinical psychology, pharmacy, physiotherapy and radiology in the private sector.¹⁶ In 2012, 22% of AHW had a higher education degree⁸. The deficit was acknowledged in the national strategy and plan, which recommended doubling the number of AHW in Angola by 2020.^{8,9} The

National Health Development Plan 2012–2025⁵ prioritizes mid-level training for “pathological anatomy, cardio-pneumology, orthoptics, nutrition and dietetics, ortho-prothesis and environmental health”.

In Angola, pre-service training of health professionals is a co-responsibility of three Ministries: Education (MinEd), Higher Education (MHE) and Health (MoH), although with the commitment of others, such as Defense. MinEd licenses secondary education institutions, approves their teaching programs and recognizes diplomas or degrees obtained outside Angola. It also finances and manages public mid-level health worker training institutions. It is the MoH that methodologically monitors these training institutions and their teaching programs. The MHE licenses universities and polytechnical institutes, approves their teaching programs and recognizes diplomas or degrees obtained outside Angola. The coordination of postgraduate training of university and mid-level technicians is a direct responsibility of the MoH, which also regulates the awarding of sector scholarships.

In a policy context where health workers training capacity has been greatly expanded in the country^{10,11}, the purpose of this research was to describe the profile of final year AHW (in 2014) in the country, to identify where they come from and their experience of training and expectations regarding their professional future. Done in the context of the development of the health workforce strategy for Angola⁷, the findings were intended to guide the transformation of AHW education and its relevance for health workforce development in Angola.

Methods

The survey was an observational cross-sectional study. The population of the study comprised all mid-level (no sampling frame available) and higher education (8 public and 15 private¹⁶) institutions training AHW in Angola. No sample was drawn. A piloted, standardized questionnaire, with closed and open-ended questions, was distributed to all final year AHW students in the study schools, during an agreed lecture period in the first quadrimester of 2014. The questionnaire is similar to the one applied in other studies of nursing and medical students in Portuguese speaking countries (PSC) and also in Angola.^{17–23} We have no means of checking the response rate. Data collection was subcontracted to a commercial firm. Data were entered into SPSS v.20 database in 2014 and descriptive statistics (counts, relative frequencies, mean and standard deviation and medians) were computed with SPSS v 25 during 2020. Statistical significance for cross-tabulation of categorical variables was tested by Pearson chi-square, Fisher exact or likelihood ratio tests as appropriate. Comparison of statistical significance of averages was tested with Anova.²⁴

For ethical reasons the identity of the schools is protected.

Results

Distribution and characterization of training institutions

The study population was distributed among: 24 training institutions, 13 public and 11 private; 7 higher education (4 public and 3 private) and 17 mid-level schools (9 public and 8 private); in 14 of the 18 provinces. All the public higher education institutions studied were outside Luanda and all private ones were in Luanda.

Students' distribution by training institutions

The study population consisted of 699 AHW students with valid responses: Most were in public sector institutions (public n = 458, 66%; private n = 241, 34%). Of those in public institutions 80% (367/458) were mid-level trainees. For private institutions most trainees (n = 161/241, 67%) were in higher education institutions.

Demographic characteristics and family background and choice of study

The student corps is markedly feminized (79%, n = 470/699). Private or higher education students were on average older and decided to follow their current training later than public or mid-level trainees (Table 1).

Table 1
Current age and age of decision to study medicine

			Age of decision to study medicine	Current age	Anova p
Level of education	Higher education	Mean	25.9	35.2	0.000
		N	238	230	
		Standard deviation	8.7	7.8	
		Median	25.0	34.5	
	Mid-level	Mean	18.8	26.4	
		N	432	425	
		Standard deviation	7.4	7.4	
		Median	18.0	24.0	
Nature of the institution	Public	Mean	20.0	28.2	0.000
		N	441	432	
		Standard deviation	8.2	8.6	
		Median	18.0	25.0	
	Private	Mean	23.7	32.0	
		N	229	223	
		Standard deviation	8.8	8.1	
		Median	22.0	32.0	

Most were single (n = 347/458, 76%); only a fifth were married (n = 91/458, 20%). Those in the higher education (n = 49/148, 33%) or in the private sector were most likely to be married (n = 55/177, 31%) (Pearson chi-square p = 0.000).

Less than half were born, and just over half completed primary school and secondary school in the capital city Luanda. The rural bias (outside Luanda and the provincial capital) is highest for higher education trainees and public sector students (Table 2).

Table 2
Places of birth and pre-higher education education

				Luanda	Provincial Capital	Other	Likelihood ratio p
Level of education	Higher	Place of birth*	N	102	106	40	* 0.000
			%	41	43	16	** 0.002
		Place of completion of 1ary education**	N	110	100	35	*** 0.012
			%	45	41	14	
		Place of completion of 2ary education***	N	118	99	22	
			%	49	41	9	
	Mid-level	Place of birth*	N	182	200	52	
			%	42	46	12	
		Place of completion of 1ary education**	N	239	167	32	
			%	55	38	7	
		Place of completion of 2ary education***	N	227	185	20	
			%	53	43	4	
Nature of institution	Public	Place of birth	N	134	244	69	0.000
			%	30	54	15	
		Place of completion of 1ary education	N	179	214	56	
			%	40	48	12	
		Place of completion of 2ary education	N	161	238	41	
			%	37	54	9	
	Private	Place of birth	N	150	62	23	
			%	64	26	10	
		Place of completion of 1ary education	N	170	53	11	
			%	72	22	6	
		Place of completion of 2ary education	N	184	46	1	
			%	80	20	0	
Total	Place of birth	N	248	306	92	NA	
		%	42	45	13		

		Luanda	Provincial Capital	Other	Likelihood ratio p
Place of completion of 1ary education	N	249	267	67	
	%	51	39	10	
Place of completion of 2ary education	N	345	284	42	
	%	51	42	7	

In line with this, $\frac{3}{4}$ (75%, n = 321/427) of public sector students considered their family as predominantly rural, but only about half (59%, n = 134/226) of private trainees (Pearson chi-square p = 0.000) (the differences between higher education and mid-level trainees are not significant).

Over half had relatives with professions in the health sector (n = 415/692, 60%). For most students (n = 596/689, 87%), the relatives had some influence in the choice of the study area. There are no differences between different levels or sector of training.

Almost all (n = 596/689, 87%) were in the course of first choice but, given the choice, 12% (n = 29/245; only 5%, 24/443 for mid-level students; Pearson chi-square p = 0.002) of higher education and 11% of private (n = 26/234; only 6%, 27/454 for public students; Pearson chi-square p = 0.012) students would opt for a different course.

Academic performance

Only 2% (n = 16/684) of the students were repeating the current year of training. There are no differences between public and private or higher and mid-level trainees.

Thirteen percent (n = 89/687) of students were accumulating curricular units from previous years: the differences between private (n = 54/239, 23%) and public (n = 35/448, 8%) trainees were significant (Pearson chi-square p = 0.000); between higher and mid-level institutions the differences were not significant.

Students' perceptions of quality of training

The great majority (n = 598/688, 87%) felt that their training would allow them to practice anywhere in the world (less so for those with mid-level training, 83%. N = 367/441 rather than higher-level training 94%, n = 231/247; Pearson chi-square p = 0.000), just in Angola (n = 72/688, 10%), or anywhere in Africa besides Angola (n = 18/688, 3%).

Most (n = 657/661, 99%) believed that their training prepared students for team work (no difference between different types of institutions). Also, that it was adequate (n = 375/650, 58%) rather than excessively theoretical (n = 63/650, 10%) or excessively practical (n = 212/650, 33%) (differences not significant between higher and mid-level education, but were significant between public and private: twice as many in the private sector n = 35/223, 16%, felt that their training was excessively theoretical compared with only n = 48/427, 7% in the public sector; Pearson chi-square p = 0.001).

Most students were satisfied with the teachers, teaching program, calendar, library support and access to study rooms; significantly more so in the higher education than the mid-level programs (except for teachers which were equally appreciated in both programs). Satisfaction with access to other support systems was low, particularly in the higher education sector, namely for: informatics support, clinical cases, laboratories and canteens. The exception is the higher degree of satisfaction in the mid-level sector with access to accommodation, sports facilities and leisure spaces (Table 3).

The public sector compares with the private sector: favorably, for calendar and access to sport's facilities; similarly, for satisfaction with the access to study rooms, program and the teachers which were equally appreciated in the private sector; and less favorably, for library, laboratory and informatics support as well as access to student accommodation and leisure spaces (Table 3).

Table 3
Indicators of student satisfaction according to level of training and nature of the institution

Type of institution		Satisfaction with:	Not satisfied	Satisfied	P		
Level of educational institution	Higher	Teachers *	42 (17%)	199 (83%)	Pearson chi-square *NS **0.010 ***0.000 # 0.001 ##0.004 ###0.003 Fisher exact test \$ 0.039		
		Teaching program**	30 (12%)	212 (88%)			
		Calendar ***	86 (35%)	159 (65%)			
		Access to study rooms#	62 (26%)	181 (74%)			
		Library support***	113 (46%)	132 (54%)			
		Informatics support ##	140 (57%)	105 (43%)			
		Access to clinical cases*	141 (58%)	104 (42%)			
		Laboratories ***	123 (50%)	121 (50%)			
		Student accommodation###	224 (93%)	16 (7%)			
		Canteens \$	162 (67%)	80 (33%)			
		Sports' facilities***	180 (74%)	64 (26%)			
		Leisure spaces##	194 (80%)	50 (20%)			
		Mid-level	Mid-level	Teachers *		54 (12%)	383 (88%)
				Teaching program**		89 (20%)	350 (80%)
Calendar ***	55 (12%)			388 (88%)			
Access to study rooms#	164 (38%)			268 (62%)			
Library support***	281 (64%)			159 (36%)			

Type of institution		Satisfaction with:	Not satisfied	Satisfied	P
		Informatics support ##	297 (68%)	139 (32%)	
		Access to clinical cases*	278 (64%)	158 (36%)	
		Laboratories ***	297 (68%)	141 (32%)	
		Student accommodation###	358 (86%)	60 (14%)	
		Canteens \$	319 (74%)	114 (26%)	
		Sports' facilities***	258 (59%)	181 (41%)	
		Leisure spaces##	302 (69%)	134 (31%)	
Nature of institution	Public	Teachers *	58 (13%)	384 (87%)	Pearson chi-square *NS
		Teaching program*	78 (18%)	367 (82%)	**0.000
		Calendar **	63 (14%)	388 (86%)	*** 0.042
		Access to study rooms*	152 (34%)	290 (66%)	#0.001
		Library support**	287 (64%)	161 (36%)	
		Informatics support **	317 (71%)	128 (29%)	
		Access to clinical cases*	277 (62%)	170 (38%)	
		Laboratories**	308 (69%)	140 (31%)	
		Student accommodation***	383 (90%)	41 (10%)	
		Canteens #	332 (76%)	107 (24%)	
		Sports' facilities**	262 (59%)	184 (41%)	

Type of institution	Satisfaction with:	Not satisfied	Satisfied	P
	Leisure spaces**	302 (68%)	141 (32%)	
Private	Teachers *	18 (16%)	198 (84%)	
	Teaching program*	41 (17%)	195 (83%)	
	Calendar **	78 (33%)	159 (67%)	
	Access to study rooms*	74 (32%)	159 (68%)	
	Library support**	107 (45%)	130 (55%)	
	Informatics support **	120 (51%)	116 (49%)	
	Access to clinical cases*	142 (61%)	92 (39%)	
	Laboratories**	112 (48%)	122 (52%)	
	Student accommodation***	199 (85%)	35 (15%)	
	Canteens #	149 (63%)	87 (37%)	
	Sports' facilities**	176 (74%)	61 (26%)	
	Leisure spaces**	194 (82%)	43 (18%)	

Financial support to study

Just under half of the students self-financed their studies and about 1/3 were financed by the parents; only a minority received a bursary. Those in private or higher education institutions were more likely to be self-financing or to be receiving a bursary and less likely to be financed by the parents. Higher education students were also less likely to be supported by family member (table 4).

Table 4 Source of financial support to study

			Parents	Bursary	Self	Other relatives	Other	Likelihood ratio p value
Level of training	Higher education	N	51	12	160	22	0	0.000
		%	21	5	65	0	0	
	Mid-level	N	202	4	132	94	2	
		%	47	1	30	22	1	
Nature of institution	Public	N	180	3	176	82	2	0.000
		%	41	12	40	18	1	
	Private	N	72	13	116	34	0	
		%	31	6	49	14	0	
Total		N	253	16	292	116	2	NA
		%	37	2	43	17		

Expectations regarding their professional future

Just over half expected a future practice exclusively in the public sector (n = 387/685, 57%). Most expected a hospital-based practice (n = 562/645, 87%). A small minority expected to work in a rural context n = 43/677, 6%) or migrate to work abroad (n = 11/677, 2%). This is similar between different levels of training. For those trained in the private sector wanting a practice in Luanda was higher (77%, n = 179/233) and in another Provincial Capital was lower (16%, n = 37/233) than for those trained in the public sector (39%, n = 173/444 and 53%, n = 234/444 respectively) (Likelihood ratio p = 0.000).

Discussion

In 2012 a national training strategy⁸ and corresponding plan⁹ identified the need to double the number of AHW in the system by 2020. This was confirmed in the National Health Development Plan.⁵ This study was an attempt to integrate this priority into the national health workforce strategy 2013-2025.⁷

The Government Program for 2009-2012 set as 2012 targets 3 doctors, 20 nurses and 9 AHW per 10 000 inhabitants, resulting on ratios of 6,67 nurses and 3 AHW per doctor. This was achieved for AHW but not for nurses.⁷

To respect this ratio of 3 AHW per doctor, the national health workforce strategy 2013-2025 develops several scenarios for health workforce development. These predict the need for AHW to vary between 37666 and 43101 by 2025.⁷ The 2014 baseline acknowledges the existence of 6414 AHW in public service, 4699 of these in the national health service; 75% were auxiliaries with basic training; of the remaining 25% it was not possible to differentiate between those with mid-level or higher education

training. There was no data on the distribution among the different professional groups that integrate the career. Hence, the scenarios of national health workforce strategy 2013-2025⁷ require the number of AHW to increase at least five fold⁷, far more ambitious target than what was stipulated in the national training strategy and corresponding plan identified^{8,9} and the National Health Development Plan⁵.

In 2014 the major effort to train AHW was being developed by the private educational sector, particularly at the higher education level¹⁶. There was no data on the effort to train AHW abroad.

This study reflects a positive message. Students are recruited with a wide geographical base; they are satisfied with their choice of training and their performance is satisfactory (less so in the private sector, where about a quarter were repeating curricular units). After training they want to settle in Angola, preferable in a hospital practice, preferably in the public sector. As the public sector does not have the capacity to absorb all students, it is satisfying to notice that many are open to practice in private sector institutions, mostly based in the provincial or national capitals, preferably in accumulation with public sector work (self-employment is still a limited option as regulations are not clear and financial support from banking or other financial institutions is not easily accessible for young graduates).

The study also provides some alert signs.

Although, in 2012, there were 165 municipal, 25 provincial and 20 national hospitals⁵, most students, despite family links to rural areas, wanted to settle professionally in the national or provincial capitals, rather than in the municipal hospitals.

Only a minority of students were receiving support on the form of a bursary, this may limit access to training, particularly higher education, mostly provided by private sector institutions. While the public sector has health facilities where practical training is well organized the private institution do not provide laboratories or other health facilities for adequate practical training, a difficulty acknowledged by the students.

Training is a significant investment by students or their relatives hence, training institutions, in respect for this effort, and to improve academic performance, must strive to improve support systems in terms of access to libraries, laboratories, clinical cases, informatic support, canteens, accommodation and leisure activities.

The great majority of students are women, with all the implications of this for health workforce planning in terms of gender balance, geographical distribution, long-term retention and availability to work overtime and in isolation, as well as lack of recognition of these professions (as reflected in the lack of bursaries and of public sector investments in their training). This feminization of the AHW workforce can potentially catalyze women's empowerment and equity and address the gender issues in society at large.²⁵

Lastly, the findings of this study are aligned with those of other studies of medical and nursing students in Angola, Brasil, Cabo Verde, Guiné-Bissau, Moçambique and Timor Leste. Everywhere, except Guiné-Bissau, the student corps was feminized. Parents and relatives are the main source of support for students. Students are usually satisfied with the quality of training, with their teachers and the study calendar, but less so with support systems. After completing their studies, trainees want to settle in urban hospital practice.¹⁷⁻²³

Most students in all countries studied¹⁷⁻²³ report family members in the health professions and highlight their importance in influencing their decision to follow health professional training, reinforcing the importance of social reproduction mechanisms in education.²⁶

Limitations of the study

A limitation of the study is the lack of a denominator for the number of AHW students and mid-level training institutions in the country. The study covers 4 of the 8 public and 3 of the 15 private higher education institutions training AHW in Angola. Still, this is a unique study both in Angola and Africa, with findings relevant for the planning of health workforce education and development.

A second limitation refers to the inability to identify the professional training being followed by the AHW students. Although there was a specific question on this, most of the students did not reply to this question.

The study was conducted in 2014. It is reported now because there are attempts to repeat it. In the last two years, in the context of the major political changes observed in the country, more than 16 000 health workers – physicians, nurses and AHW – have been recruited into public sector health services, and there is a need to evaluate the implementation of the national health workforce strategy and to update it.

A final limitation refers to the classification of localities as either rural or urban. This is a difficulty acknowledged in the literature²⁷. We opted to follow the recommendations of Couper²⁸ accepting as rural any place outside the national capital city (Luanda) and/or outside the provincial capitals. This is aligned with the classification followed by the 2014 Angolan population census (<http://onuangola.org/agencias/unhabitat/atlas/>).

Conclusions

This study highlights some of the issues that will have to be addressed by training institutions in order to contribute to a balanced health workforce in Angola, with AHW in quantity with the quality and distribution necessary to address health system and population needs. It highlights the importance of private education institutions in meeting this need. As training is a significant investment by students or their relatives, training institutions must strive to improve support systems in terms of access to libraries, laboratories, clinical cases, informatic support, canteens, accommodation and leisure activities.

Abbreviations

AHW – allied health workers

MHE – Ministry of Higher Education

MinEd – Ministry of Education

MoH – Ministry of Health

Declarations

This study was part of a broader consultation for the Government of Angola.

Ethics approval and consent to participate

Not applicable, as the paper uses data collected for the preparation of the Health Work Force Strategic Plan 2014-2025 for the Angolan Government, developed in 2013-2014.

Consent for publication

Not applicable.

Availability of data and materials

The dataset generated and/or analysed during the current study are not publicly available because they were obtained during an official support mission to the Government of Angola but are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they do not have any competing interests

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Authors' contributions

PF wrote the paper, coordinated the study, collaborated in data analysis; HF, and NG collaborated in the implementation of the study. All authors read, reviewed all versions of the paper and approved the final manuscript.

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