

Retention of qualified health professionals in rural areas: a case control study

Takao Kojo and colleagues report the results of an interesting study about health worker intentions in Senegal

In order to achieve universal health coverage, it is necessary to recruit qualified healthcare professionals and appropriately allocate them across the country in both urban and rural settings.¹

Currently, there is a recognised global shortage of nurses, affecting both developing and developed nations alike.² In addition, there is known that it is harder to recruit and retain healthcare professionals in rural regions compared to urban areas.³ This is because rural areas are characterised by challenges such as the lack of basic amenities, poor living conditions, inadequate infrastructure, and poor career support.⁴

To employ and retain healthcare professionals in such areas studies have shown that initiatives such as career related education programmes; compulsory rural service programmes; financial incentives, and personal and professional support services can be important incentives in recruiting and retaining healthcare professionals.⁵ Moreover, a lack of support for dealing with isolation and living in difficult environments has been identified as an obstacle for staff retention.⁶

However, a very few studies^{1,4-6} have been conducted examining the status of health professionals working in such areas in Africa. Most nationwide studies using random sampling measures were conducted in developed countries. Among the available limited studies, only a few examined the sociodemographic characteristics of the health professionals and the differences in working between rural and urban areas.

Senegal, located in sub-Saharan West Africa, has a population of approximately 14 million and a life expectancy at birth of 61.7 years.⁹ The Senegalese government is currently developing a policy to encourage health professionals to remain in rural areas that the government defines as 'difficult' regions. The Human Resources Department of the Senegalese Health Ministry has a tentative working definition of 'difficult' regions, which are characterised by a set of geographical, security, infrastructure, and social service criteria.¹⁰

In 2012, there were 0.08 physicians as well as 0.48 nurses and midwives per 1000 people in the country;^{7,11} in concrete terms, there were a total of 1,011 medical doctors, 4,892 nurses, and 1,227 midwives throughout the country. The maldistribution of HRH in the country is striking, with 60% of medical doctors, 41% of nurses, and 45% of midwives working in the capital city of Dakar, despite the fact that 80% of Senegal's population lives outside the city.⁸

The purpose of this study was to analyse the factors influencing the retention of health professionals working in the rural and difficult areas of Senegal.

Methods

The participants of this study were randomly selected healthcare professionals living and working within rural and difficult areas from the official human resource database of the Ministry of Health. A structured questionnaire was administered to 268 individuals randomly selected from 1531 doctors, nurses, midwives, and superior anesthesiology technicians working at public hospitals and clinics in eight regions of Senegal (defined as 'difficult' areas). To increase the response rate and prevent participants from skipping questions, they were individually interviewed using the questionnaires.

The survey was conducted between January and March 2015. The questionnaire included items concerning sex, age, ethnicity, region of origin, work region, level of workplace in health structure, marital status, cohabitation status with spouse and children, willingness to stay at the current workplace, region of origin and school area, and opinions on the compulsory service programme in rural and difficult areas. A locally trained team of ten interviewers and one coordinator collected the data after pilot testing the questionnaire.

A chi-squared test was used to analyse how willingness to stay in current locations and opinions on the possibility of a compulsory service program in rural and difficult areas differed according to sociodemographic characteristics (sex, age, professional specialisation, employment status, work region, level of workplace in health structure, workplace location, marital status, cohabitation status and children, and region of origin and school area).

The dataset was then divided into groups by sex. Furthermore, each group was subdivided by marital status and parental status (children vs. no children). The multi-layered data were analysed using logistic regression analysis, with the participants' willingness to stay in their current work location as the dependent variable and the variables found to be significant according to

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Table 1: Demographic characteristics of study participants

		n	%
Sex	Male	131	48.9
	Female	137	51.1
Age	20–29	40	14.9
	30–39	153	57.1
	40–49	34	12.7
	50–59	41	15.3
Socio-professional category of health staff	General doctor	12	4.5
	Specialised doctor	16	6.0
	Nurse	164	61.2
	Midwife	69	25.7
	Superior technician in anaesthesiology	7	2.6
	Civil servant	163	60.8
Employment status	Contracted with ministry of health	50	18.7
	Contracted with hospital	25	9.3
	Contracted with health committee	8	3.0
	Contracted with local government	4	1.5
	Volunteer	4	1.5
	Other	14	5.2
		58	21.6
Work region	Ziguinchor		
	Tambacounda	47	17.5
	Fatick	36	13.4
	Kolda	34	12.7
	Matam	39	14.6
	Kaffirine	12	4.5
	Kedougou	24	9.0
	Sedhiou	18	6.7
Workplace/level of health structure	Regional health department	3	1.1
	District health department	1	0.4
	Health centre	94	35.1
	Health post	104	38.8
	Hospital	66	24.6
Location of workplace	Capital town of region or district	102	38.1
	Area outside capital town	166	59.7
Marital status	Married	211	78.7
	Single	51	19.0
	Widow	0	0.0
	Divorced	6	2.2
Living with spouse†	Yes	93	44.1
Having children	Yes	139	51.9
Living with children	Yes	80	57.6
Area of origin and schooling	Origin (Urban) and schooling (Urban)	136	50.7
	Origin (Urban) and schooling (Rural)	18	6.7
	Origin (Rural) and schooling (Urban)	89	33.2
	Origin (Rural) and schooling (Rural)	25	9.3
Willingness to stay in current workplace		167	62.3
Years willing to stay in current workplace		3.2 ± 6.0	
Agreement with potential compulsory service program in rural and difficult areas		231	86.2
Years of compulsory service in rural and difficult areas		3.9 ± 3.0	

† among 211 married persons. ‡ among 139 persons with children

the chi-square test as independent variables. The level of significance was set at $P < 0.05$. SPSS Statistics 19.0 for Windows (IBM Corp., Armonk, NY) was used for all analyses.

Results

Table 1 shows the sociodemographic characteristics of the respondents. The sample was 48.9% male, 72.0% were in their 20s or 30s, and predominately consisted of nurses (61.2%), followed by midwives (25.7%). The main medical institutions with which the respondents were affiliated were health posts (38.8%), health centers (35.1%), and hospitals (24.6%). In 59.7% of cases, the participants work outside of the capital town of their region or district. Participants who were originally born and educated in urban areas made up 50.7% of the sample. Conversely, participants who were born and educated in rural areas accounted for only 9.3%. The remaining 40.0% were born in rural areas (or urban areas) but attended school in urban areas (or rural areas). As for marital status, 211 respondents were married (78.7%), out of which 93 lived with their spouses (44.1%). In addition, 139 respondents had children (51.9%), and 80 of them (57.6%) lived with their children.

A total of 231 respondents (86.2%) agreed with the compulsory service in rural and difficult areas for a fixed period of time (Table 1). However, no significant differences were found in correlations between participants' characteristics and agreement with compulsory service (Table 2).

The participants were asked whether they intended to stay at their current work location (willingness to stay) (Table 1), and 167 participants (62.3%) answered 'yes.' Moreover, participants who indicated a willingness to stay were asked, 'for how many more years do you intend to work here?' The mean response to this question was 3.2 years.

The relationship between participant characteristics and their willingness to stay is shown in Table 3. The following participant characteristics were significantly and positively associated with willingness to stay: being male, being in their 50s, occupation as a nurse, work region, living with spouse/children, and living in a rural area (both for their origin area and the area where they completed school) (Table 2).

Participants' willingness to stay was set as the dependent variable, and those variables shown to be significant in the previous chi-square analysis were included

Table 2: Willingness to stay in current workplace and agreement with potential compulsory service program

		Willingness to stay in current workplace			Agreement with compulsory service program in rural and difficult areas		
		n	%	P-value	n	%	P-value
Sex	Male	90	68.7	0.035	116	88.5	0.274
	Female	77	56.2		115	83.9	
Age	20–49	132	58.1	0.001	195	85.9	0.745
	50–59	35	85.4		36	87.8	
Socio-professional category of health staff	Nurse	113	68.9	0.005	141	86.0	0.896
	Other	54	51.9		90	86.5	
Employment status	Contract with MoH, and civil servant	130	61.0	0.395	183	85.9	0.795
	Other	37	67.3		48	87.3	
Work region	Kedougou or Sedhiou	19	45.2	0.013	33	78.6	0.119
	Other	148	65.5		198	87.6	
Level of health structure	Hospital	45	68.2	0.257	56	84.8	0.715
	Other	122	60.4		175	86.6	
Location of workplace	Capital town of region or district	68	66.7	0.249	86	84.3	0.484
	Area outside capital town	99	59.6		145	87.3	
Marital status	Married	132	62.6	0.873	183	86.7	0.625
	With a long-term partner, single, widowed, divorced	35	61.4		48	84.2	
Living with spouse†	Living with spouse	71	76.3	0.000	81	87.1	0.889
	Not living with spouse	61	51.7		102	86.4	
Having children‡	Yes	82	62.6	0.989	113	86.3	0.797
	No	50	62.5		70	87.5	
Living with children‡	Living with children	60	75.0	0.001	69	86.3	0.974
	Not living with children	28	47.5		51	86.4	
Area of origin and schooling	Origin (Urban) = Schooling (Urban)	73	53.7	0.003	115	84.6	0.431
	Origin (Urban) ≠ Schooling (Urban)	94	71.2		116	87.9	
	Origin (Rural) = Schooling (Rural)	21	84.0	0.019	22	88.0	0.783
	Origin (Rural) ≠ Schooling (Rural)	146	60.1		209	86.0	

P-values are based on Chi-square tests. † among married participants ‡ among those who have children

as independent, explanatory variables (Table 3). Among all males, being a nurse was positively correlated with willingness to stay; among married males, being a nurse was only slightly positively correlated ($P = 0.051$). Regardless of sex, living with their children was positively correlated with willingness to stay.

Among all the females, work region (Kedougou or Sedhiou) was negatively correlated with willingness to stay. Further, among married females, being raised and educated in an urban area had significant negative correlations with willingness to stay.

Discussion

This is the first nationwide survey in Senegal analysing the factors influencing rural retention of health professionals. The results of this study reveal the opinions of compulsory service for a fixed period of time,

the proportion of healthcare professionals willing to stay employed in rural and difficult areas within Senegal, and the factors influencing willingness to stay.

One predominant factor influencing willingness to stay in our study was rural background and experience: namely, being raised or educated in a rural area. Previous studies suggested that work environment, isolation, motivation, satisfaction, and general living environment impact staff retention levels.^{4,6,12} Many respondents in our study who were raised and educated in rural areas were willing to stay. The reason for this could be that these respondents had a greater understanding of life in these areas and had friends and/or family nearby.¹³

Another factor is family bonding. In our study, a significant correlation between willingness to stay and living with children for both sexes was found. This

Table 3: Logistic regression analyses of willingness to stay in current workplace among participants

Male	All males (n = 131)		Married (n = 113)		Have children (n = 77)	
	adj-OR	(95% CI)	adj-OR	(95% CI)	adj-OR	(95% CI)
Age 50–59	2.270	(0.812-6.348)	1.950	(0.668-5.697)	2.085	(0.622-6.994)
Nurse	2.851	(1.193-6.815)	2.564†	(0.998-6.591)	4.700	(1.379-16.016)
Work region (Kedougou, Sedhiou)	0.957	(0.290-3.161)	1.202	(0.348-4.145)	0.549	(0.078-3.850)
Living with spouse	-	-	2.313‡	(0.975-5.486)	-	-
Living with children	-	-	-	-	3.231	(1.054-9.903)
Origin (Urban) and Schooling (Urban)	0.910	(0.389-2.130)	0.781	(0.305-1.997)	0.614	(0.193-1.955)
Origin (Rural) and Schooling (Rural)	2.159	(0.516-9.038)	1.149	(0.242-5.449)	0.255	(0.033-1.960)
Female	All females (n = 137)		Married (n = 98)		Have children (n = 54)	
	adj-OR	(95% CI)	adj-OR	(95% CI)	adj-OR	(95% CI)
Age 50–59	-	-	-	-	-	-
Nurse	0.804	(0.369-1.751)	0.736	(0.280-1.933)	0.992	(0.237-4.153)
Work region (Kedougou, Sedhiou)	0.326	(0.126-0.841)	0.362	(0.113-1.165)	1.088	(0.198-5.976)
Living with spouse	-	-	2.480	(0.786-7.819)	-	-
Living with children	-	-	-	-	7.102	(1.714-28.679)
Origin (Urban) and Schooling (Urban)	0.504	(0.229-1.110)	0.258	(0.097-0.682)	0.206	(0.049-0.873)
Origin (Rural) and Schooling (Rural)	0.366	(0.461-35.221)	1.673	(0.140-20.031)	-	-

CI = Confidence interval; adj-OR = Adjusted odds ratio † $p = 0.051$ ‡ $p = 0.057$ For females, age 50–59 was not included as an independent variable as very few participants were within this age range.

correlation can be explained by the general belief that children benefit from being raised by parents who live with them. Some studies have reported that having good local schools for the children of hospital staff is an important factor in staff retention.⁴ On the other hand, in our study, living with a spouse was not significantly correlated with willingness to stay (except when considering only males, wherein it was slightly positively correlated; $P=0.051$).

Further, nurses were more willing to stay at the current workplace than other professionals. The reason for this particular correlation in the context of Senegal might be that task shifting is more prevalent in rural areas, giving nurses greater responsibility and authority over diagnosis and treatment, whereas in urban areas nurses are mainly required to support medical doctors.

Any country has social and cultural diversities that affect the preference to stay, such as security, ethnicity and language. In our study, the reason that such a low percentage of female participants working in the regions of Kedougou and Sedhiou were willing to stay remains unknown. However, prolonged conflict in the Casamance area, including Sedhiou, and the distance from Dakar to Kedougou could be possible reasons.

In terms of the compulsory service to rural and difficult areas, 86.2% of participants agreed with the mandate. No significant characteristics of the participants were found to be correlated with agreement with the mandate. Participants may have thought that all healthcare professionals in the country should be equally involved in supporting the health and medical service in rural and difficult areas. However, the opinions of healthcare workers in urban areas may be different.

Implications for health policy-makers

The majority of participants (62.3%) were willing to stay in their roles for a limited period of average 3.2 years (Table 1), which would ease securing their stable allocation; however, policy makers have to consider some of the findings of this study to retain them longer.

If healthcare workers have a family, it is important to allocate them to locations where children can stay together with their parents. In cases in which both the husband and wife are civil servants, they could be transferred to the same area. Ensuring good housing facilities for families is also a good suggestion.

Moreover, the area to which workers are allocated should, ideally, be close to the area that they grew up and were educated in. In this study, those who were raised and educated in urban areas were less willing to continue working in rural and difficult areas compared to those who were raised and educated in rural areas. Previous studies also suggest that while recruiting and training to encourage health professionals to work in rural area, their birthplace should be considered,^{14,15} as rural background and experience with rural area were positively associated with retention in rural areas.^{16,17}

Strength and limitations

This sample is considered to be representative of the target population, and the results of this study are reliable. In addition, the results of this study are consistent with those of previous studies, suggesting generally high versatility.

On the contrary, this study is limited to those who were working in the eight regions that were predetermined as rural and difficult areas and no comparison



Beautiful vistas; needy people: but it remains difficult to get (and keep) health personnel to work in these areas.

was made with those working in urban areas. Because of the limited number of participants, our study lacks some statistical power.

Conclusions

This study suggests that taking into account the category of professional, rural background and education, parental status, and sex when allocating staff to rural and difficult areas will help increase the number healthcare professionals who wish to stay in such areas.

Declaration

Ethics approval and consent to participate: This study was approved by the ethical Committee of Senegalese Ministry of Health and National Center for Global health and Medicine. All participants were read a consent form, which they then signed. They were informed of their right to refuse participation in the study and the confidentiality of the collected information was assured. The participants did not receive any incentives for participation.

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