

Gender and University: Factors that Influence Peruvian Midwives' Employment and Wages

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Abstract

Although a reduction in economic inequality has been reported in Peru, there are wage differences for professionals in the labour market mediated by structural determinants. Gender and university could be related to this problem. A secondary analysis of the “National Survey of University Graduates and Universities, 2014” was performed to analyse the influence of gender and university on employment and wages in the Peruvian midwifery labour market through a multivariate analysis. The chi square, *p*-value, odds ratio – crude and adjusted – and a 95 per cent confidence interval were calculated. The results allow concluding that gender and university determine unemployment and low wages in the Peruvian midwifery labour market. Female health workers experience a higher risk of unemployment, working in jobs that are not related to their professional training, and low payment. Midwives from public or upcountry universities experience a higher risk of unemployment and low wages. Working in jobs that are not related to the professional training was determined by coming from private and upcountry

universities; it was a factor associated with low wages and the probability for having to do two jobs. It is necessary to improve governmental interventions to eliminate these barriers, of which the issue of remuneration is the most important.

Keywords: gender; university; labour market; discrimination; midwifery; Peru

Introduction

Education is one of the tools to reduce poverty. The higher the level of education the smaller the chance of being poor (Patlán 2013; Yamada and Castro 2012), because it allows people to enter the labour market with better opportunities and better profitability (Castro, Casavilca, and Lizaraburu 2010). Work and opportunities for employment improve the health of people from different social groups (OMS 2011), provide income to ensure material living conditions and access to health services, determine the status of people in the social hierarchy, and give the capability to obtain certain privileges such as easier access to better healthcare or education care and the opportunity to live in residential areas with better health conditions (OMS 2008; Solar and Irwin 2010; Whitehead 1991).

Latin America is the region with the greatest socio-economic inequality in the world despite the important advances it has made in this new century (Gálvez et al. 2016, Navarrete 2016, Vera and Poy 2017). One of the effects of this inequality is based on income, which is characterised, among other factors, by the stagnation of relative wages of most of the workers, the widening of the wage gap between employees and managerial staff, and the decrease of payment for work based on performance (Navarrete 2016). This problem is exacerbated by discriminatory behaviour, such as unfair actions towards individuals of certain social groups by using different criteria other than the qualifications and merits required to perform a productive activity and that can be quantified by the results observed in the labour market (statistical discrimination), which results in unfair remuneration (Horbath and Gracia 2014).

Peru has been one of the fastest growing economies in Latin America and the Caribbean in the past 10 years, with an average growth rate of 5.9 per cent in the gross domestic product and low inflation (2.9% on average). As a result, strong employment and income growth has been observed between 2005 and 2015, with improvements in economic inequality around the nation and this trend is expected to continue (Banco Mundial 2016).

Along with this economic growth in Peru, between 2012 and 2017, access to family planning methods, prenatal control and institutional delivery has allowed for improvements in maternal and neonatal health (INEI 2018a). These improvements have been significantly greater in the rural areas, although there are still significantly lower rates than in the urban areas (INEI 2018b). A key human resource for this achievement has been the midwifery professionals (INEI 2018c); a group that has

increased fivefold in the last three decades and currently brings together 16 000 professionals (15% of all health professionals) nationwide (Ministerio de Salud del Perú 2015). In Peru, midwifery is a field of health that includes both prenatal care to pregnant women and healthcare to mothers; it is provided mainly by female health workers.

However, although remuneration translates the recognition and evaluation of work as a reflection of the qualifications, responsibilities, obligations and experiences of human resources (Ministerio de Salud del Perú 2018), wage differences have been observed in the last National Survey of University Graduates and Universities (NSUGU) (INEI 2015), despite higher education levels that should increase the probability of participation and better wages in the labour market (Arpi and Arpi 2016).

Gender and ethnicity define occupational characteristics through influencing the accessibility to education and occupation, and finally to remuneration (Bustamante and Arroyo 2008, OIT 2014; OMS 2008; Solar and Irwin 2010). Resulting wages affect the socio-economic position and the spending capability that finally could perpetuate discrimination (Castro and Yamada 2011; Gushiken et al. 2015). Budgetary restrictions could limit access to healthcare services for people; out-of-pocket expenses (almost 50% of the cost of healthcare) are mainly observed in less poor people (Ypanaqué-Luyo and Martins 2015). In this situation, low economic capacity to face out-of-pocket expenses could be the main cause for not accessing the health system or affecting the households' economy in detriment of other goods and services consumption, becoming more vulnerable to poverty (Lavilla 2012; Ypanaqué-Luyo and Martins 2015).

Kogan, Fuchs, and Lay (2011) reported that belonging to the white male gender, and expensive university group increases the probability of having better job opportunities in the Peruvian labour market. Some studies have shown wage gaps in health workers' remuneration (Vecchio et al. 2013; Wilson et al. 2018). In the United States, white male physicians earn substantially more than black male physicians while white and black female physicians earn similar incomes, but significantly less than their male counterparts (Ly, Seabury, and Jena 2016). These significant differences in salary of the two genders exist even after accounting for age, experience, specialty, faculty rank, and measures of research productivity and clinical revenue (Jena, Olenski, and Blumenthal 2016). Taype-Rondán et al. (2018) found that Peruvian female physicians are more at risk of low levels of remuneration.

Research about factors that influence the midwifery wage gap has not been performed, therefore this study was proposed to analyse the influence of gender and education on employment and wages in the Peruvian midwifery labour market through a multivariate analysis.

Materials and Methods

Study Design

An observational study was carried out based on the secondary analysis of the main results from the NSUGU of 2014 (INEI 2015).

Study Population

The study population consisted of professionals who graduated from a university, who had less than three years of study delay in the course of their career, and who were 25 years old in their last year of study at a university. The sampling frame was obtained from the National University Census conducted in 2010 by The National Institute of Statistics and Informatics (NISI). It was a probabilistic, stratified one-stage list, independent in each university career and selected university, and included 214 midwives who graduated from a university.

Variables

The activity condition, total wage, and number of jobs were considered dependent variables. Based on the questionnaire used in the NSUGU, the activity condition was measured based on question 401 of the questionnaire: “Did you have a job last week?” Those respondents who answered “yes” were the employed pharmacists and those who answered “no” were unemployed. The total wage was measured from the sum of the income reported by the graduates in questions 436 to 438 and grouped into two categories: less than 1 000 PEN and equal to or greater than 1 000 PEN. The number of jobs was obtained from question 418 of the questionnaire: “What is the secondary occupation that was performed?” Those respondents who gave a second occupation were regarded as having two occupations and those who did not answer were regarded as having a single occupation.

The independent variables were gender, type of university management, and location of the university. The type of main job was considered an independent variable for the total wage and number of jobs, and the total wage was considered an independent variable for the number of jobs. Gender was measured from question 11: “Gender of the graduate” and had two answers, male and female. The type of university management was measured from question 311 of the questionnaire: “What is the name of the last university from which you graduated?” with two responses, public and private. Finally, the location of the university was determined from module 09: “Identification and location of the university, department, province and district” and was categorised as Lima and Callao and the rest of the country. The type of main occupation, which was the relation between the job that was being performed and the actual job that required professional training, was measured from question 406 of the questionnaire: “Is your job related to your professional training?”, with two possible answers, “related” and “non-related”. The remuneration of the main job was measured from the sum of the income reported by the graduates in questions 436 and 437, and

grouped into two categories: less than 1 000 PEN (\approx 347.83 USD) and equal to or greater than 1 000 PEN.

Processing of Data

The database was downloaded from the web portal of the NISI (www.inei.gob.pe). The databases of all the surveys carried out by the NISI can be found in the “Micro data” section of the “Databases” menu. From this menu the tab “Query by Survey” can be accessed, the “National Survey of University Graduates and Universities” selected, and then the year “2014”. “Annual” was chosen in the period.

The survey of graduates is composed of eleven modules: 587, 588, 589, 590, 591, 592, 593, 594, 595, 596 and 600. In order to establish the database, the databases of modules 587, 590 and 592 were merged with the help of statistical software IBM SPSS version 23 and Stata 14.

Expansion factors were used for the presentation of the results because the data were obtained from a sample. According to the sampling theory, the expansion factor is the ability of each individual selected in a probabilistic sample to represent the population. In stratified sampling, the expansion factors or sample weights are obtained as the quotient between the size of the stratum and the size of the sample in said stratum (Lohr 2000).

Analysis of Data

The chi-square and the p value in 2x2 squares were calculated for the variables gender, the type of university management, the location of the university, the type of main job, and the main job wage.

The crude odds ratio (COR) and its 95 per cent confidence interval (CI) were calculated in the bivariate analysis, assuming the categories “male” for gender, “private” for type of university management, “Lima and Callao” for location of the university, “related” for type of job, and “equal to or more than 1 000 PEN” in the main job wage as negative factors.

The logistic regression model was used in the multivariate analysis to identify and describe the association of each of the dependent variables with independent ones, through the adjusted odds ratio (AOR) and its 95 per cent CI. The Hosmer-Lemeshow test was used to evaluate the logistic regression model for goodness of fit, and to check whether the proposed model, the logistic model, can explain what it observes by assuming as a null hypothesis: “there are no differences between the observed values and the predicted values”. This rejection, by using the chi-square, indicated that the model was not well adjusted (Hosmer and Lemeshow 2000).

Ethics

The published statistical data did not contain personal identification variables. No permission was required because the NISI offers users all the information contained on its website whenever the source is cited (INEI 2015).

Results

The bivariate analysis confirmed that unemployment was more likely be present in female midwives (COR = 1.388), in professionals who graduated at a public university (COR = 1.331), and when the university was located outside of Lima or Callao (COR = 2.581) (see Table 1). Multivariate analysis confirmed that midwives who graduated from these universities had the highest risk of unemployment (AOR = 2.729) followed by female ones (AOR = 1.779) and, finally, the type of university management (public ones).

Table 1: Activity condition by gender, type of university management, and location of the university

Characteristic	Unemployed		Employed		Total	<i>p</i>	Odds ratio (95%CI)	
	n	%	n	%	n		Crude	Adjusted*
Gender								
Female	486	15.65	2620	84.35	3 106	0.019	1.388 (1.055 – 1.827)	1.779 (1.346 – 2.351)
Male	66	11.82	494	88.18	560		1.000	
Type of university management								
Public	237	17.42	1 124	82.58	1 361	0.002	1.331 (1.108 – 1.600)	1.234 (1.023 – 1.488)
Private	315	13.68	1 989	86.32	2 304		1.000	
Location of the university								
Other places in the country	479	17.65	2 235	82.35	2 714	0.000	2.581 (1.993 – 3.341)	2.729 (2.098 – 3.549)
Lima and Callao	73	7.70	879	92.30	952		1.000	

*Hosmer-Lemeshow = 0.72; *p* = 0.6976

In the bivariate analysis working in a non-related field to the university training was more likely to occur in females (COR = 1.104), and also when coming from upcountry universities (COR = 2.854). The same happened with private university graduates; public university graduates were not at risk of working in jobs that are not related to their university training (COR = 0.649). The multivariate analysis confirmed that professionals who graduated at upcountry universities had three and a half chances of working in jobs that are not related to their university training. This risk was lower in

females (AOR = 1.464), and public universities continued as a protective feature (AOR = 0.546) (Table 2).

Table 2: Relation between type of main job and professional training by gender, type of university management, and location of the university

Characteristic	Non-related		Related		Total	<i>p</i>	Odds ratio (95% CI)	
	n	%	n	%	n		Crude	Adjusted*
Gender								
Female	635	24.25	1 985	75.75	2 620	0.399	1.104 (0.787 – 1.388)	1.464 (1.156 – 1.854)
Male	111	22.46	383	77.54	494		1.000	
Type of university management								
Public	215	19.12	909	80.88	1 124	0.000	0.649 (0.543 – 0.777)	0.546 (0.454 – 0.656)
Private	531	26.70	1 458	73.30	1 989		1.000	
Location of the university								
Other places in the country	638	28.57	1 597	71.43	2 235	0.000	2.854 (2.287 – 3.561)	3.461 (2.752 – 4.353)
Lima and Callao	108	12.26	771	87.74	879		1.000	

*Hosmer-Lemeshow = 0.45; *p* = 0.9291

It was also observed that midwives with jobs that are not related to their university training were exposed to less than 1 000 PEN (COR = 6.475), and this observation had no important variation in the multivariate analysis (AOR = 5.634). Female professionals were at a higher risk of low remuneration (COR = 1.670) and this characteristic was maintained in the multivariate analysis (AOR = 1.802). Graduation from a public university served as a risk factor of lower than 1 000 PEN remuneration in the multivariate analysis, but not in the bivariate analysis. Opposite to this is the graduation from upcountry universities that exposed professionals to a higher risk of earning less than 1 000 PEN as shown in the bivariate analysis but it was not observed in the multivariate analysis (Table 3).

Finally, through the bivariate and multivariate analysis, female professionals showed the highest probability of having two occupations (COR = 3.418 and AOR = 2.698, respectively) (see Table 4). Also, graduation at public universities and earning less than 1 000 PEN served as determinants of working in two jobs or more after the bivariate and multivariate analysis.

Table 3: Total wages by gender, type of university management, location of the university, and type of main job

Characteristic	< 1 000 PEN		≥ 1 000 PEN		Total n	p	Odds ratio (95% CI)	
	n	%	n	%			Crude	Adjusted*
Gender								
Female	780	29.8	1 840	70.2	2 620	0.000	1.670 (1.321 – 2.112)	1.802 (1.393 – 2.333)
Male	100	20.2	394	79.8	494		1.000	
Type of university management								
Public	325	28.9	800	71.1	1 125	0.552	0.050 (0.893 – 1.235)	1.278 (1.067 – 1.532)
Private	555	27.9	1 435	72.1	1 990		1.000	
Location of the university								
Other places in the country	675	30.2	1 560	69.8	2 235	0.000	1.423 (1.188 – 1.704)	1.074 (0.876 – 1.316)
Lima and Callao	205	23.3	674	76.7	879		1.000	
Type of main job								
Non-related	443	59.4	303	40.6	746	0.000	6.475 (5.412 – 7.747)	6.634 (5.504 – 7.995)
Related	436	18.4	1 931	81.6	2 367		1.000	

*Hosmer-Lemeshow = 3.493; $p = 0.745$

Table 4: Number of jobs by gender, type of university management, location of the university, type of main job, and main job wage

Characteristic	Two jobs or more		Only one job		Total n	p	Odds ratio (95% CI)	
	n	%	n	%			Crude	Adjusted*
Gender								
Female	515	19.7	2 105	80.3	2 620	0.000	3.418 (2.370 – 4.929)	2.698 (1.853 – 3.928)
Male	33	6.7	461	93.3	494		1.000	
Type of university management								
Public	227	20.2	897	79.8	1 124	0.004	1.316 (1.090 – 1.588)	1.539 (1.263 – 1.874)
Private	321	16.1	1 669	83.9	1 990		1.000	

Characteristic	Two jobs or more		Only one job		Total	<i>p</i>	Odds ratio (95% CI)	
	n	%	n	%			n	Crude
Location of the university								
Other places in the country	327	14.6	1 908	85.4	2 235	0.000	0.510 (0.421 – 0.618)	0.528 (0.429 – 0.649)
Lima and Callao	221	25.1	658	74.9	879		1.000	
Type of main job								
Non-related	127	17.0	619	83.0	746	0.637	0.949 (0.673 – 1.180)	0.865 (0.671 – 1.115)
Related	421	17.8	1 947	82.2	2 368		1.000	
Main job wage								
< 1 000 PEN	204	22.2	714	77.8	918	0.000	1.537 (1.267 – 1.866)	1.655 (1.326 – 2.065)
≥ 1 000 PEN	344	15.7	1 851	84.3	2 195		1.000	

*Hosmer-Lemeshow: 9.246; *p* = 0.235

Discussion

Participation of women in the Peruvian labour market is limited by traditional social patterns (Zumaeta and Limachi 2007). Most of the health workers in midwifery are women (94,1%) (Ministerio de Salud del Perú 2015), but findings in this research confirm that the female gender is a conditioning factor for unemployment despite being university graduates, which is possibly explained by the responsibilities the women perform at home (Ansoleaga, Vézina and Montaña 2014; Patlán 2013) and cannot be changed (Torres 1989). Midwifery has a huge presence of female professionals; but gender discrimination still prevails. Research showed that men can receive 20 per cent more calls for a job interview after submitting their curriculum vitae with the same characteristics as those presented by women (Galarza, Kogan and Yamada 2012).

The findings also show that if women enter the Peruvian labour market there is a higher possibility of working in a job that is not related to their professional training as a main activity, and they will therefore be exposed to a lower income compared to their male counterparts. This income would be considered secondary for the family (Alcañiz 2015).

On the other hand, although work experience increases the possibility of a better income (Arpi and Arpi 2016), women would be less willing to accept positions of responsibility, in the public or private sector, especially those that involve long working hours, and the willingness to travel and to relocate (Fischer and Chávez 2015). They are pressed by their relatives to prioritise their domestic, maternal and care roles and because of the idea that domestic service is offered by low-skilled

people (Alcañiz 2015; Kogan, Fuchs, and Lay 2011). Other factors involved are the absence of public infrastructure (for example, breastfeeding places, and nursery schools), adequate partner income to ensure a satisfactory quality of family life (Kogan, Kámiche, and Lay 2011), and the disadvantage in the labour market compared with men (Alcañiz 2015).

Additionally, public universities do not prepare midwifery students to become part of the workforce in the Peruvian labour market because professionals coming from this type of universities have a greater possibility of being unemployed or to earn less than 1 000 PEN when working in the labour market. Although there is an official profile of the Ministry of Health, there are two profiles proposed by institutions related to the training of these professionals, but they are dissimilar in their content. This situation, which is not unique to midwifery professionals, shows that professionals who enter the labour market are not necessarily, nor specifically, trained to work at the first level of care, entry and space of higher demand for human resources in healthcare, therefore the likelihood that the public sector can assume the type and number of professionals needed to work at the first level of care is low. This could help to explain the subsequent gaps in attraction and retention of health professionals within public institutions. As a result, there would be an oversupply of health human resources for the private sector, exposing them to accept lower salaries in order to reach a quota in the Peruvian labour market (Jiménez, Mantilla, Huayanay-Espinoza, Gil, García and Miranda 2015)

This situation also motivates professionals to look for a second job and could be the result of the greater importance given to private university education, because there are more institutions, more enrolments, and more programmes in this segment. In 2011, only 28.16 per cent of the scholarships were awarded to students from public universities (García 2013). Midwives who graduated from private universities would be applying for better jobs even those that are not related to their professional training in order to have a better income.

University graduates from upcountry are more likely to be unemployed, or to be working in some activity not related to the learned skills at university, and to be earning less than 1 000 PEN. This situation would determine in the professionals the need for applying for more than one occupation to achieve sufficient income to cover daily personal and familial needs. In this way, inequality in access to decent employment is possibly mediated by the centralisation of the university education because the universities that allow greater labour insertion and related-to-career employment are located in Lima, the capital of Peru (SUNEDU 2016).

Working two jobs was mediated by gender, public universities, and low remuneration, but it does not imply that this decision is voluntary. It is possibly mediated by the lack of access to a full-time job and, therefore, a decent remuneration (Alcañiz 2015) and it is also associated with universities located in Lima and Callao.

The situation described in this study could be motivated by the different forms of employment that exist in this labour market, temporary, part-time or self-employed work, among others, which expose midwifery professionals to precarious jobs characterised by insecurity, low remuneration, inaccessibility to social protection and greater exposure to occupational risks (Ministerio de Salud del Perú 2015). So, when interpreting these results, several limitations inherent to the study must be taken into account. Unemployment did not consider the situation or professionals' behaviour, so it should not be regarded as a rate of job opportunities deficit (Márquez-Scotti 2014), because unemployed people may be looking for a job with better wages (Arpi and Arpi 2016). Variables related to low work quality contribute to the significant increase in inequality and in the vulnerability of workers both in stability and in the quality of their working conditions (insecurity) (Alcañiz 2015), but they were not included in this study.

Ethnicity (Galarza, Yamada, and Zelada 2015; Kogan, Kámiche, and Lay 2011, Moreno et al. 2012), marital status, location of residence, labour dependence, family composition (Arpi and Arpi 2016), age, physical appearance (Botello and Guerrero 2017; Galarza and Yamada 2012), and disability (Encinas, Gómez, and Contreras 2017) were not considered because the NSUGU did not take into account these characteristics.

Conclusion

The results allow concluding that education at university is not acting as a mechanism to achieve equal employment opportunities in the country. Gender and the type of university determine unemployment and low wages in the Peruvian midwifery labour market. Females were at a higher risk of unemployment, working in jobs that are not related to their professional training, and low wages. Midwives from public or upcountry universities were at higher risk of unemployment and low wages. Working in jobs that are not related to the professional training was determined by coming from private and upcountry universities; and was a factor associated with low wages and the probability for having to do two jobs.

Because the national policy on human resources in health, drawn up around 2030, among other actions, aims to improve compensation and economic deliveries, to generate incentives for institutions that provide well-being and job security, and to institutionalise dialogue meetings that allow consensus actions between health authorities and union representatives, it is necessary to deepen the analysis of these variables and other variables not considered in this research. This will improve governmental interventions to eliminate the barriers that create differences in the labour market for midwifery professionals, taking into account the most important issue of remuneration.

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