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Approach to the indicators of the nursing labor market in 6 Latin American countries

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Abstract: Objective: This study aims to describe a set of indicators related to the nursing labor market in six Latin American countries in order to identify common patterns and unique aspects among them. Methods: A quantitative, descriptive, cross-sectional study was conducted in 2021. The study population consisted of nursing personnel from six Latin American countries selected through non-probability convenience sampling. Data were collected using an electronic questionnaire. A total of 797 completed surveys were included in the analysis, after informed consent of the participants. Data were analyzed with EpiInfo 7.1 and R Software. Results: 88% of respondents were female and 41% had a postgraduate degree. Of the total number of participants with active employment (691), 25% did not have a formal contract. The public sector accounts for 70% of the nursing staff. Salaries vary significantly, ranging from the lowest of 489 USD in Argentina to the highest of 1,745.2 USD in Chile. In relation to working hours, 69% work between 36 and 48 hours per week, while 25% work less than 36 hours and 5% more than 48 hours. Conclusions: These results highlight the features of precariousness that affect Latin American nurses. The increase in levels of professional training is not matched by improvements in working conditions. The disparity in salaries and the contractual informality evidenced urge the need for policies that ensure equitable working conditions adjusted to the demands of health care in the region.

Keywords: Labor Market Indicators, Labor Precariousness, Nursing, Latin America.

Abordagem aos indicadores do mercado de trabalho de enfermagem em 6 países da América Latina

Resumo: Objetivo: Este estudo tem como objetivo descrever um conjunto de indicadores relacionados ao mercado de trabalho de enfermagem em seis países da América Latina, a fim de identificar padrões comuns e aspetos únicos entre eles. Métodos: Foi realizado um estudo quantitativo, descritivo e transversal em 2021. A população do estudo consistiu em enfermeiros de seis países latino-americanos selecionados por meio de amostragem de conveniência não probabilística. Os dados foram recolhidos através de um questionário eletrónico. Um total de 797 inquéritos preenchidos foi incluído na análise, sujeito ao consentimento informado dos participantes. Os dados foram analisados utilizando os softwares EpiInfo 7.1 e R. Resultados: 88% dos participantes eram do sexo feminino e 41% tinham um diploma de pós-graduação. Do total de participantes com emprego ativo (691), 25% não têm um contrato formal. O sector público representa 70% do pessoal de enfermagem. Os salários variam significativamente, desde o mais baixo de 489 USD na Argentina até ao mais alto de 1.745,2 USD no Chile. Relativamente ao horário de trabalho, 69% trabalham entre 36 e 48 horas por semana, enquanto 25% trabalham menos de 36 horas e 5% mais de 48 horas. Conclusões: Os resultados evidenciam características de precariedade que afetam os enfermeiros latino-americanos. O aumento dos níveis de formação profissional não é acompanhado por melhorias nas condições de trabalho. A disparidade de salários e a informalidade contratual evidenciada insistem na necessidade de políticas que garantam condições de trabalho equitativas e ajustadas às exigências dos cuidados de saúde na região.

Palavras-chave: Indicadores de Mercado de Trabalho, Precariedade do Trabalho, Enfermagem, América Latina.

1. Introduction

The world's demographic dynamics have experienced steady population growth in recent years, making it imperative to address the associated challenge of ensuring access to health for all (Wilmoth et al., 2021). This imperative takes on particular relevance when considering that one of the preeminent problems at the global level lies in the limited access to health services by the population. The magnitude of this challenge finds support in the Sustainable Development Goals of the 2030 Agenda, promoted by the United Nations, pointing out the need to address the growing demand for health personnel in line with the population increase (UN, 2015). A paradigmatic example of this need was palpably evident during the recent COVID-19 pandemic, where the crucial role played by the health workforce underscored the urgency of strengthening this sector (Fraher et al., 2020). This scenario exposes health professionals to extreme complexity, with the risk of being subjected to precarious working conditions due to the flexibility of the labor market that considers varied forms of labor contracting, with increasingly fewer rights and benefits.

According to the WHO (2020), during 2020, approximately 28 million nursing professionals were reported globally. Of the total, about 30% (8.4 million) are distributed in the Region of the Americas, constituting 56% of the total health workforce. Although this proportion is lower than the world average (59%), more than 80% of these professionals are located in countries that are home to half of the global population. Globally, the shortage of professionals is estimated at 5.9 million, with 89% of this deficit (5.3 million) concentrated in low- and lower-middle-income countries. In the Region of the Americas, 59% are professional nurses and 37% are associate professionals, compared to 69% and 22%, respectively, worldwide. The number of nurses per 1000 inhabitants in Latin American countries can vary significantly. For example, according to the Banco Mundial (2023) there are 2.5 nurses per 1000 inhabitants in Ecuador (in 2018), 2.6 in Peru (in 2021), 3.0 in Mexico (in 2020), 4.6 in Chile (in 2021) and 5.4 in Argentina (in 2020).

The global nursing workforce shows a prevalence of youth, with 38% of professionals under the age of 35 and 17% over the age of 55. Although one in six nursing professionals worldwide is projected to retire in the next decade, the Region of the Americas faces a particular challenge, as approximately 24% of the nursing workforce is 55 years of age or older (WHO, 2020; Cassiani et al., 2020).

In a context where the majority of nursing professionals are women with diverse educational levels ranging from assistants (with 2 years of study) to graduates or specialists (with 5 or more years of study), the lack of hiring, lack of rest days, long working hours and the absence of social benefits affect not only the work environment, but also, the quality of life of these workers (Lopera-Betancur et al., 2018; PAHO, 2019; WHO, 2020; Sanchez, 2020). The nursing labor market in the Latin American region faces multiple challenges, exposing nurses to job instability that hinders their ability to effectively perform their duties.

These challenges derive mainly from the incursion of flexible and fragmented forms of contracting promoted mainly by the private sector and gradually adopted in some private sector settings (Petersen et al., 2015). Similar problems have already been documented in several countries in the region. In Mexico, for example, underemployment and unemployment have been known for more than a decade, a reality replicated in other Latin American countries that evidences the deficiencies of the labor system to absorb all workers. In Argentina, multiple employment is three times higher in nursing compared to other professions (Aspiazu, 2017), which hinders the provision of timely and quality

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services. Likewise, a decrease in the availability of jobs and flexibilization in the forms of hiring has been observed in the region (Cassiani, 2020; Cedeño Tapia, 2021).

Despite sustained recognition over the years, and especially during the pandemic (Arribas-Cacha, 2020; Fuentes-Bermúdez, 2020), nursing professionals have not experienced significant improvements in their working conditions. Efforts to understand the health workforce situation have focused on calculations of staff-to-population ratios, shortfalls, and projections of training needs, which often do not match the market's capacity to absorb them. In the context of the pandemic, these calculations were exceeded and solved by the temporary hiring of hundreds of nurses in Latin America and other regions of the world (Bourgeault et al., 2020) who, in some cases, did not have the required competencies, however, proved to be a quick way out of the great demand for personnel in a conjunctural situation such as the pandemic (Aristizabal et al., 2023).

Given the scarce exploration of the specific characteristics of the labor market insertion of nursing personnel (Zavala et al., 2014), it is crucial to develop a comprehensive approach that allows obtaining a deeper understanding of the current situation. Therefore, the central objective of this paper is to describe a set of indicators related to the nursing labor market in six Latin American countries, in order to identify common patterns and unique aspects among them.

2. Methodology

A cross-sectional study with descriptive scope was carried out on the labor market indicators of nursing personnel in public and private institutions in six Latin American countries. To carry out this study, an online questionnaire was used through the free access platform Google Forms. The questionnaire was sent to nursing staff leaders of organizations, universities and professional groups in 9 countries in the region, and its dissemination was requested through the platforms and official pages of each institution and organization to its members. The questionnaire was active between the months of July to September of 2021 for voluntary and free completion. It included a consent form with an explanation of the objectives and scope of the study, risks, ways to reduce risks and the commitment of the researchers to protect the data collected, which did not include sensitive information such as names, addresses or personal telephone numbers. Twenty items were included with closed multiple-choice questions aimed at obtaining sociodemographic and employment data of the participants. The information of those who did not give their consent was eliminated participants. This research tool was intended to collect information on the background and working conditions of the nursing staff. This methodological approach was chosen to maximize participation and facilitate comparative analysis across settings. The data collected were stored in dedicated servers at the National Institute of Epidemiology "Dr. Juan H. Jara".

All the information obtained in this study is subject to and regulated by the Personal Data Protection Law Nº 25326 of Argentina, complies with the provisions of the Declaration of Helsinki, MSAL Res. 1480/11 of Argentina. As well as the approval of the Research Ethics Committee of the National Institute of Epidemiology "Dr. Juan H. Jara" of Argentina as the responsible institution with the largest number of researchers participating in the project. Once the data were collected, they were downloaded in Excel format and transported to the R software (freely available) to be processed and analyzed according to the objectives of the project; only three of the researchers had access to the complete data for processing and analysis.

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Due to the limited resources available, the sample is not probabilistic, it is the result of active recruitment by the researchers through various media, schools, associations, networks, universities, institutions, so it does not have inferential statistical capacity. However, the intention is to provide some initial evidence on the working conditions of nurses in the region with primary data coming directly from nurses, since most of the known data are derived from governmental data.

The initial sample consisted of 918 participants from nine Latin American countries: Argentina, Bolivia, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Mexico, Nicaragua and Peru. For the selection of the countries that would be part of the study, the number of responses given was observed and it was calculated which countries had a statistically significant sample level, which was considered to have a confidence level of 90% and a margin of error of 5%. Thus, only Argentina, Chile, Colombia, Ecuador, Peru and Mexico were selected.

The second inclusion criterion focused on the completed questionnaires and the consent given to use the data in this research. Any questionnaire that was not completed or that did not give consent for the study was eliminated from the study. After eliminating those who did not meet these criteria, the final sample consisted of 797 participants, representing a reduction of 13%.

This multi-country study took into account variables that fall into three categories of information related to job insecurity, following the methodology proposed by Román-Sánchez (2013) and taken up by Aristizábal et al. (2019). In this way, the following categories are recognized. An "Economic" dimension, which considers the level of income received in exchange for the labor force, taking the minimum wage as a reference; a "Regulation" dimension, which includes the contract and the length of the working day, in particular, the existence or not of a written contract; and a "Job security" dimension, where affiliation to social security and social benefits are evaluated. This is measured by the receipt of health services and the availability of at least one social benefit.

Other variables analyzed were sociodemographic and employment characteristics, which included educational level (technical, undergraduate, or postgraduate), gender, age (grouped as 24 or less, 25 to 44, 45 to 64, and 65 or more), marital status (married or united, single, divorced or widowed), being employed in the health sector or in another sector, being employed in the public or private economic sector, and number of jobs (one, two or more).

In particular, to compare and parameterize the variable "salary", the amounts reported in each country were converted to US dollar currency according to the exchange rate indicated for each currency as of July 4, 2021. To analyze the number of weekly hours worked, three categories were established: professionals working less than 36 hours per week, those working between 36 and 48 hours per week, and those working more than 48 hours per week.

Percentages with their respective 95% confidence intervals are indicated for all variables. The variation between each country's income was relativized to the U.S. dollar currency. With these data, a Kruskal-Wallis test was performed to evaluate the differences in income between professionals in the different countries analyzed. Homogeneity of variances and normality were assessed using the Levene and Shapiro-Wilk tests, respectively. To establish differences between countries with respect to salary, an ANOVA test was performed followed by a Tukey and Kramer test to study significant differences.

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Generalized linear models were used because the database does not respond to a normal distribution. With this model it is possible to understand which variables are important in shaping the salary received by the different professionals. The selected explanatory variables, with which the models were constructed, were divided into two groups generated according to the classification of the data. On the one hand, data related to life history characteristics: gender, educational level and length of service. On the other hand, data related to the professional's working conditions: gender, total number of jobs held and total hours worked per week. The generalized linear model used was a linear regression with Gaussian structure and identity function as the link function (Burnham and Anderson, 2002). The best models were selected using the Akaike Information Criterion (AIC) (Akaike, 1973). Models with a difference in delta AIC (dAIC) < 2 were considered to have equivalent support of data were transferred to EpiInfo version 7.1 for percentage analysis and to R for ANOVA, GLM and graphical outputs.

3. Results

Table 1 shows that, of the total of 797 participants (100%), the distribution by country was: 25.9% (207) from Argentina; 25.8% (206) from Peru; 19.7% (157) from Ecuador; 15.43% (123) from Mexico; 9.54% (76) from Colombia and 3.51% (28) from Chile.

Table 1. Sociodemographic characterization of the study population.

		General	Argentina	Chile	Colombia	Ecuador	Mexico	Peru
Gender	Women	87,95 (85,51 - 90,03)	85,33 (80,02 - 89,68)	92,86 (76,50 - 99,12)	88,89 (79,95 - 94,79)	88,20 (82,19 - 92,74)	87,32 (80,71 - 92,31)	87,75 (82,71 - 91,91)
	Men	12,05 (9,97 - 14,49)	14,67 (10,32 - 19,98)	7,14 (0,88 - 23,50)	11,11 (5,21 - 20,05)	11,80 (7,26 - 17,81)	12,68 (7,69 - 19,29)	12,15 (8,09 - 17,29)
	<24	0,76 (0,35 - 1,65)	0,89 (0,11 - 3,17)	0,00 (0,00 - 12,34)	6,17 (2,03 - 13,82)	4,35 (1,77 - 8,75)	9,86 (5,50 -15,99)	3,74 (1,63 - 7,23)
Age	24-44	66,58 (63,22 - 69,78)	56,44 (49,69 - 63,02)	60,71 (40,58 - 78,50)	70,37 (59,19 - 80,01)	67,70 (59,89 - 74,85)	52,11 (43,58 - 60,56)	79,91 (73,90 - 85,06)
	45-66	31,77 (28,62 - 35,10)	42,22 (35,69 - 48,97)	39,29 (21,50 - 59,42)	23,46 (14,75 - 34,18)	27,33 (20,61 - 34,90)	34,51 (26,74 - 42,94)	16,36 (11,66 - 22,00)
	>66	0,89 (0,43 - 1,82)	0,44 (0,01 - 2,45)	0,00 (0,00 - 12,34)	0,00 (0,00 - 4,45)	0,62 (0,02 - 3,41)	3,52 (1,15 - 8,03)	0,00 (0,00 - 1,71)
Civil Status	Married or Free Union	49,43 (45,97 - 52,90)	48,21 (41,51 - 54,97)	57,14 (37,18 - 75,54)	50,62 (39,27 - 61,92)	49,69 (41,72 - 57,67)	52,82 (44,27 - 61,24)	40,38 (33,73 - 47,30)
	Single	39,87 (36,53 - 43,32)	17,41 (12,68 - 23,02)	10,71 (2,27 - 28,23)	3,70 (0,77 - 10,44)	14,91 (9,79 - 21,36)	6,34 (2,94 - 11,69)	3,29 (1,33 - 6,65)
	Divorce or Widow	10,69 (8,73 - 13,03)	34,38 (28,18 - 40,99)	32,14 (15,88 - 52,35)	45,68 (34,56 - 57,13)	35,40 (28,04 - 43,32)	40,85 (32,68 - 49,40)	56,34 (49,39 - 63,10)
Number of Children	0	29,01 (25,94 - 32,28)	17,49 (12,74 - 23,12)	17,86 (6,06 - 36,89)	41,77 (30,77 - 53,41)	21,02 (14,93 - 28,23)	35,46 (27,59 - 43,95)	47,64 (40,76 - 54,59)
	1-3	64,50 (61,10 - 67,77)	69,69 (63,48 - 75,89)	75,00 (55,13 - 89,31)	56,96 (45,33 - 68,06)	73,89 (66,28 - 80,56)	60,99 (52,43 - 69,09)	49,06 (42,15 - 55,99)
	>3	6,49 (4,97 - 8,43)	12,56 (8,51 - 17,63)	7,14 (0,88 - 23,50)	1,27 (0,03 - 6,85)	5,10 (2,23 - 9,79)	3,55 (1,16 - 8,08)	3,30 (1,34 - 6,68)
University Degree	Yes	92,72 (90,71 - 94,33)	92,00 (87,65 - 95,19)	100,00 (87,66 - 100,00)	93,83 (86,18 - 97,97)	97,52 (93,76 - 99,32)	86,62 (79,90 - 91,75)	96,26 (92,77 - 98,37)
	No	7,28 (5,67 - 9,29)	8,00 (4,81 - 12,35)	0,00 (0,00 - 12,34)	6,17 (2,03 - 13,82)	2,48 (0,68 - 6,24)	13,38 (8,25 - 20,10)	3,74 (1,63 - 7,23)
Maximum Degree	Auxiliary	1,52 (0,87 - 2,63)	0,49 (0,01 - 2,69)	0,00 (0,00 - 12,34)	2,63 (0,32 - 9,18)	6,92 (3,50 - 12,04)	0,00 (0,00 - 2,78)	0,00 (0,00 - 1,72)
	Technical Title	5,81 (4,38 - 7,66)	12,20 (8,05 - 17,47)	0,00 (0,00 - 12,34)	6,58 (2,17 - 14,69)	3,77 (1,40 - 8,03)	9,16 (4,82 - 15,45)	2,36 (0,77 - 5,42)
	Bachelor Degree	51,77 (48,29 - 55,23)	68,78 (61,95 - 75,05)	53,57 (33,87 - 72,49)	21,05 (12,54 - 31,92)	57,23 (49,15 - 65,04)	44,27 (35,61 - 53,21)	46,70 (39,83 - 53,66)
	Post graduate	40,91 (37,54 - 44,37)	18,54 (13,46 - 24,54)	46,43 (27,51 - 66,13)	69,74 (58,13 - 79,75)	32,08 (24,90 - 39,93)	46,56 (37,81 - 55,48)	50,94 (44,01 - 57,85)

Source: own elaboration

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Women represented 87.95% of the total number of participants. The most represented age group, both in the overall structure of the region and by country, was 24 to 44 years of age. Nearly 90% of the participants were between 24 and 66 years of age. Of the total number of participants, 48.92% reported being married or in union and 64% reported having between 1 and 3 children. Of the total number of participants, 92.72% had a university degree, of which 41% had a postgraduate degree, including a specialty, master's or doctoral degree. Among the participants by country, the distribution in relation to the percentage with postgraduate studies was: Colombia 70%, Peru 51%, Chile 46% and Mexico 47%, Ecuador 32% and Argentina 19%.

Table 2 shows the working conditions of the participants. A total of 86.7% reported having a job. Of the total number of people with an active job, more than 85% reported having a written contract.

Table 2. Employment characterization of the study population.

		General	Argentina	Chile	Colombia	Ecuador	Mexico	Peru
Economically active	Yes	86,70 (84,17 - 88,88)	88,44 (83,53 - 92,31)	96,43 (81,65 - 99,91)	79,01 (68,54 - 87,27)	31,68 (24,58 - 39,46)	86,62 (79,90 - 91,75)	85,51 (80,07 - 89,94)
	No	13,30 (11,12 - 15,83)	11,56 (7,69 - 16,47)	3,57 (0,09 - 18,35)	20,99 (12,73 - 31,46)	68,32 (60,54 - 75,42)	13,38 (8,25 - 20,10)	14,49 (10,06 - 19,93)
Employment	With Contract	88,28 (85,66 - 90,47)	83,42 (77,51 - 88,30)	88,89 (70,84 - 97,65)	89,06 (78,75 - 95,49)	86,36 (78,51 - 92,16)	91,87 (85,56 - 96,03)	89,07 (83,63 - 93,20)
	Without Contract	11,72 (9,53 - 14,34)	16,58 (11,70 - 22,49)	11,11 (2,35 - 29,16)	10,94 (4,51 - 21,25)	13,64 (7,84 - 21,49)	8,13 (3,97 - 14,44)	10,93 (6,80 - 16,37)
Type of Contract	Eventual	11,87 (9,66 - 14,49)	3,52 (1,43 - 7,11)	3,70 (0,09 - 18,97)	4,69 (0,98 - 13,09)	29,09 (20,82 - 38,52)	11,38 (6,36 - 18,36)	15,85 (10,88 - 21,96)
	Autonomous	3,47 (2,34 - 5,12)	5,03 (2,44 - 9,05)	0,00 (0,00 - 12,77)	0,00 (0,00 - 5,60)	0,00 (0,00 - 3,30)	1,63 (0,20 - 5,75)	6,56 (3,43 - 11,17)
	Permanent	52,53 (48,81 - 56,23)	72,36 (65,59 - 78,45)	44,44 (25,48 - 64,67)	34,38 (22,95 - 47,30)	49,09 (39,43 - 58,80)	70,73 (61,85 - 78,59)	24,59 (18,54 - 31,49)
	Service provider	13,60 (11,25 - 16,36)	2,01 (0,55 - 5,07)	3,70 (0,09 - 18,97)	37,50 (25,70 - 50,49)	10,00 (5,10 - 17,19)	1,63 (0,20 - 5,75)	28,96 (22,51 - 36,11)
	Temporary	15,05 (12,58 - 17,91)	14,57 (9,98 - 20,25)	44,44 (25,48 - 64,67)	20,31 (11,28 - 32,23)	11,82 (6,45 - 19,36)	11,38 (6,36 - 18,36)	15,85 (10,88 - 21,96)
	Other	3,47 (2,34 - 5,12)	2,51 (0,82 - 5,77)	3,70 (0,09 - 18,97)	3,13 (0,38 - 10,84)	0,00 (0,00 - 3,30)	3,25 (0,89 - 8,12)	8,20 (4,66 - 13,16)
Institution	Public	80,14 (77,01 - 82,95)	80,40 (74,20 - 85,68)	81,48 (61,92 - 93,70)	46,88 (34,28 - 59,77)	87,27 (79,57 - 92,86)	86,99 (79,74 - 92,38)	81,32 (74,89 - 86,70)
	Private for profit	11,45 (9,28 - 14,04)	13,07 (8,72 - 18,56)	14,81 (4,19 - 33,73)	32,81 (21,59 - 45,69)	6,36 (2,60 - 12,67)	4,88 (1,81 - 10,32)	8,79 (5,11 - 13,88)
	Private non-profit	7,25 (5,54 - 9,43)	3,52 (1,43 - 7,11)	3,70 (0,09 - 18,97)	18,75 (10,08 - 30,46)	6,36 (2,60 - 12,67)	7,32 (3,40 - 13,44)	8,79 (5,11 - 13,88)
	Independent work	1,16 (0,59 - 2,27)	3,02 (1,11 - 6,45)	0,00 (0,00 - 12,77)	1,56 (0,04 - 8,40)	0,00 (0,00 - 3,30)	0,81 (0,02 - 4,45)	1,10 (0,13 - 3,91)
Work Unit	Health care center	18,38 (15,67 - 21,44)	26,63 (20,63 - 33,35)	22,22 (8,62 - 42,26)	4,69 (0,98 - 13,09)	10,91 (5,77 - 18,28)	21,14 (14,30 - 29,42)	17,49 (12,28 - 23,78)
	Communitary	1,88 (1,10 - 3,19)	1,51 (0,31 - 4,34)	3,70 (0,09 - 18,97)	4,69 (0,98 - 13,09)	1,82 (0,22 - 6,41)	0,00 (0,00 - 2,95)	2,19 (0,60 - 5,50)
	Consulting room	1,74 (1,00 - 3,01)	1,01 (0,12 - 3,58)	18,52 (6,30 - 38,08)	0,00 (0,00 - 5,60)	0,00 (0,00 - 3,30)	0,81 (0,02 - 4,45)	2,19 (0,60 - 5,50)
	Company/ Factory	2,60 (1,65 - 4,08)	1,01 (0,12 - 3,58)	7,41 (0,91 - 24,29)	6,25 (1,73 - 15,24)	0,91 (0,02 - 4,96)	1,63 (0,20 - 5,75)	4,37 (1,91 - 8,43)
	School / University	11,87 (9,66 - 14,49)	6,53 (3,52 - 10,91)	11,11 (2,35 - 29,16)	26,56 (16,30 - 39,09)	21,82 (14,51 - 30,70)	17,07 (10,89 - 24,91)	3,28 (1,21 - 7,00)
	Hospital	52,24 (48,25 - 55,94)	48,74 (41,61 - 55,91)	14,81 (4,19 - 33,73)	46,88 (34,28 - 59,77)	60,00 (50,22 - 69,22)	49,59 (40,46 - 58,75)	57,38 (49,87 - 64,64)
	Government Office	3,91 (2,70 - 5,63)	3,02 (1,11 - 6,45)	11,11 (2,35 - 29,16)	4,69 (0,98 - 13,09)	2,73 (0,57 - 7,76)	4,88 (1,81 - 10,32)	3,83 (1,55 - 7,72)
	Other	7,38 (5,66 - 9,57)	11,56 (7,47 - 16,84)	11,11 (2,35 - 29,16)	6,25 (1,73 - 15,24)	1,82 (0,22 - 6,41)	4,88 (1,81 - 10,32)	9,29 (5,51 - 14,46)

Source: own elaboration

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Regarding the type of contract, around 50% have an indefinite contract; however, differences were observed among the informants by country, while in Argentina and Mexico permanent hiring exceeds 70%. In Colombia, Peru, Chile and Ecuador this type of contract was reported by less than 50% of the participants. On the other hand, for these countries the most common forms of contracting are associated with temporary, occasional or term contracts.

In terms of the institutional affiliation of the participants, the public sector is the largest employer, with a percentage of over 70%. Colombia has the lowest level (46%) of public sector employment. One percent of the overall average of participants' report being self-employed; in no country does this figure exceed 4 percent. Fifty percent of respondents work in hospital units, followed by those working in health centers (18%). However, the profile by country is very varied and the general pattern is not reflected in all cases.

Table 3 presents the specific working conditions of the participants. Here the salary received stands out. Thus, it is possible to observe that the average monthly income in the region is around US$830, although the average income in each country is very diverse, ranging from a minimum average of US$489 for Argentina to a maximum average of US$1745.2 for Chile.

Table 3. Working conditions of the study population.

		General	Argentina	Chile	Colombia	Ecuador	Mexico	Peru
Income in U$S		784,91 (297,01 - 1272,81)	489 (304,8 - 673,3)	1745,2 (1035,3-2455)	868,5 (560,5 - 1176,5)	1323,8 (778,9 - 1868,7)	667,4 (329,5 - 1005,2)	851,5 (441,4 - 1261,6)
Workday	<36	24,93 (21,91 - 28,22)	37,88 (31,10 - 45,03)	3,85 (0,10 - 19,64)	10,94 (4,51 - 21,25)	11,65 (6,17 - 19,47)	26,23 (18,68 - 34,96)	17,75 (12,31 - 24,36)
	36 - 48	69,08 (65,61 - 72,35)	57,58 (50,37 - 64,55)	84,62 (65,13 - 95,64)	70,31 (57,58 - 81,09)	85,44 (77,12 - 91,61)	69,67 (60,70 - 77,67)	75,15 (67,93 - 81,46)
	>48	5,99 (4,48 - 7,97)	4,55 (2,10 - 8,45)	**11,54** (2,45 - 30,15)	**18,75** (10,08 - 30,46)	2,91 (0,60 - 8,28)	4,10 (1,34 - 9,31)	7,10 (3,72 - 12,07)
Overtime	Yes	46,02 (42,34 - 49,75)	46,23 (39,16 - 53,42)	51,85 (31,95 - 71,33)	**68,75** (55,94 - 79,76)	39,09 (29,93 - 48,86)	40,65 (31,89 - 49,88)	43,72 (36,41 - 51,23)
	No	53,98 (50,25 - 57,66)	53,77 (46,58 - 60,84)	48,15 (28,67 - 68,05)	31,25 (20,24 - 44,06)	60,91 (51,14 - 70,07)	59,35 (50,12 - 68,11)	56,28 (48,77 - 63,59)
Extra Jobs	Yes	67,54 (63,95 - 70,92)	50,00 (42,83 - 57,17)	70,37 (49,82 - 86,25)	78,13 (66,03 - 87,49)	**86,36** (78,51 - 92,16)	65,85 (56,76 - 74,16)	**74,32** (67,35 - 80,48)
	No	32,46 (29,08 - 36,05)	50,00 (42,83 - 57,17)	29,63 (13,75 - 50,18)	21,88 (12,51 - 33,97)	13,64 (7,84 - 21,49)	34,15 (25,84 - 43,24)	25,68 (19,52 - 32,65)
Social benefits	Yes	91,75 (89,46 - 93,58)	94,97 (90,95 - 97,56)	100,00 (87,23 - 100,00)	73,44 (60,91 - 83,70)	97,27 (92,24 - 99,43)	91,06 (84,56 - 95,45)	90,16 (84,90 - 94,07)
	No	8,25 (6,42 - 10,54)	5,03 (2,44 - 9,05)	0,00 (0,00 - 12,77)	**26,56** (16,30 - 39,09)	2,73 (0,57 - 7,76)	8,94 (4,55 - 15,44)	9,84 (5,93 - 15,10)
Social Security	Yes	83,21 (80,24 - 85,81)	90,45 (85,49 - 94,15)	55,56 (35,33 - 74,52)	65,63 (52,70 - 77,05)	87,27 (79,57 - 92,86)	82,11 (74,18 - 88,44)	81,42 (75,02 - 86,78)
	No	16,79 (14,19 - 19,76)	9,55 (5,85 - 14,51)	**44,44** (25,48 - 64,67)	**34,38** (22,95 - 47,30)	12,73 (7,14 - 20,43)	17,89 (11,56 - 25,82)	18,58 (13,22 - 24,98)

Source: own elaboration

Of the total sample, about 70% of respondents work between 36 and 48 hours per week and 25% work less than 36 hours per week. Regarding unpaid overtime, the overall analysis for the region indicates that 55% of respondents do not work overtime, while 45% do. This pattern is consistent in all countries except Chile. In particular, in Colombia, around 70% of respondents' report working unpaid overtime.

In general terms, more than 90% report having social benefits of some kind related to their work. This pattern is replicated in all countries except Colombia, where 27% of

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respondents reported having no social benefits of any kind, since in this country it is common to receive an "integrated" salary from which the employee must cover health services and professional risk insurance.

Eighty-two percent of the participants reported having "Social Security". However, when analyzing the profile of each country, it is observed that there are differences between them, constituting two large groups. The first group exceeds the general value for the region, which includes Argentina (90%), Ecuador (87%), Mexico (82%) and Peru (81%), the second group reflects values that are below the general average, which are Chile (55%) and Colombia (65%).

Figure 1 is presented below to establish a comparative parameter on salaries in each country and the disparities between them. The countries with the most uniform salaries among health professionals are Argentina, Colombia and Mexico, while Chile, Ecuador and Peru show the greatest disparities.

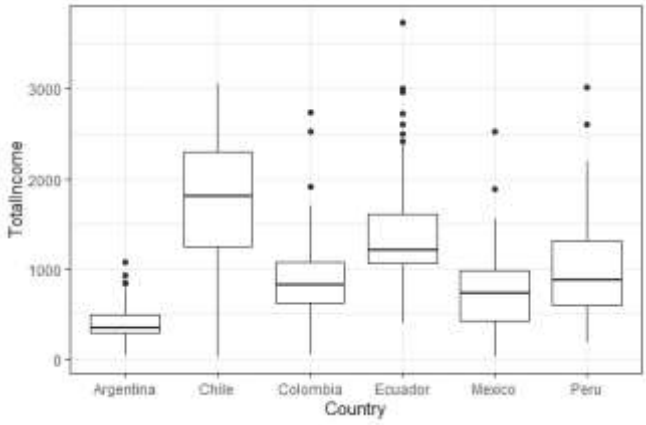

Figure 1. Income of health professionals in the different countries of the study

(*Source: own elaboration)*

The results of the generalized linear models (GLM) based on a Gaussian distribution with an identity relationship function between income level and the variables educational level and seniority are presented below. The models are shown with the delta AIC and the weight of each model.

The results show that the variables that best explain the income conformation of professionals in the different countries, with respect to their labor characterization (Table 4) are varied. However, when evaluating the representative models for each country, it is observed that the variables "seniority" and "educational level" are relevant in all cases, since the difference in the weight of the Akaike Criterion is always low. Despite having relevance, "gender" is subordinated to the other variables studied in the models, while in Chile it has no significance. Regarding the interaction between variables, the most significant seems to be that between "seniority" and "level of studies". Two peculiarities emerge from all these models. The first is in Ecuador, where the model that includes all variables and all interactions is the one that best explains wage composition. On the other hand, in the case of Colombia, although the model that best predicts income distribution is the one that includes educational level, the second model is the null model that does not include any variable, so the statistical power of these models is low.

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Table 4. Results of the generalized linear models (GLM) based on a Gaussian distribution with an identity relationship function between the level of income and the variables level of study and seniority as responses

Argentina			Chile			Colombia			Ecuador			Mexico			Peru		
Mod	delta	W_i	Mod	delta	W_i	Mod	delta	W_i	Mod	delta	W_i	Mod	delta	W_i	Mod	delta	W_i
1 3 5	0.00	0.98	(Null)	0.00	0.28	124	0.00	0.33	135	0.00	0.74	Todo	0.00	0.34	23	0.00	0.52
3	8.94	0.01	2	0.73	0.20	2	0.23	0.30	Todo	2.83	0.18	12	0.62	0.25	236	2.02	0.19
1 3	9.47	0.01	236	2.09	0.10	12	1.64	0.15	236	6.88	0.02	123	2.12	0.12	123	2.11	0.18
1	39.80	0.00	1	2.20	0.09	23	2.48	0.10	3	8.54	0.01	2	2.66	0.09	2	4.38	0.06
(Null)	40.78	0.00	3	2.38	0.09	236	3.39	0.06	(Null)	8.65	0.01	124	2.80	0.08	12	6.47	0.02
2	40.85	0.00	23	3.00	0.06	123	4.02	0.04	13	8.75	0.01	236	3.28	0.07	3	6.81	0.02
2 3	41.14	0.00	124	3.54	0.05	Todo	5.88	0.02	1	9.11	0.01	23	3.84	0.05	124	8.35	0.01
1 2	42.69	0.00	12	3.54	0.05	135	11.07	0.00	124	9.66	0.01	135	7.92	0.01	13	8.82	0.01
1 2 3	42.81	0.00	135	4.74	0.03	13	14.39	0.00	2	9.74	0.01	13	8.82	0.00	Todo	9.24	0.01
1 2 4	68.91	0.00	13	4.90	0.02	3	14.51	0.00	12	9.88	0.01	3	12.94	0.00	135	10.74	0.00
2 3 6	100.20	0.00	Todo	5.36	0.02	(Null)	15.93	0.00	23	10.53	0.00	1	14.93	0.00	(Null)	30.88	0.00
Todo	161.38	0.00	123	6.00	0.01	1	17.00	0.00	123	10.63	0.00	(Null)	22.72	0.00	1	32.83	0.00

Note: The models are shown with the delta AICs and the weights of each model.

Model labels: 1 = seniority, 2 = gender, 3 = educational level, 4 = seniority: gender, 5 = seniority: educational level, 6 = gender: educational level, 7 = seniority: gender: educational level.

Source: own elaboration.

When considering variables related to working conditions (Table 5), an equally dissimilar pattern is observed. There are no models that contain variables uniformly across countries. In Argentina and Ecuador, the variables Gender, Total number of jobs and the interaction between them are the ones that best explain income distribution in these countries. On the other hand, when considering what happens in Colombia, the pattern changes and the explanatory variables coincide with Gender, Total Hours Worked in the week and the interaction of these variables. In Peru, the variables that stand out are total hours worked and total jobs held by professionals, but no interaction is significant. Two peculiarities are also observed for this set of models. The first occurs in Mexico, where the model that best explains income distribution includes all the variables and all their interactions. On the other hand, in Chile, the only variable with some significance seems to be the total hours worked per week, however, as this model is below the null model, which excludes all variables, it has no statistical weight.

Table 5. Results of the GLM based on a Gaussian distribution with an identity relationship function between the income level and the variables total weekly work hours and total jobs as responses

Argentina			Chile			Colombia			Ecuador			México			Perú		
Mod	delta	W_i	Mod	delta	W_i	Mod	delta	W_i	Mod	delta	W_i	Mod	delta	W_i	Mod	delta	W_i
13	0.00	0.40	135	0.00	0.87	3	0.00	0.21	Todo	0.00	0.49	12	0.00	0.52	1	0.00	0.40
123	0.06	0.39	Todo	3.82	0.13	Null	0.27	0.18	13	1.50	0.23	123	0.59	0.39	13	1.56	0.18
135	1.39	0.20	Null	18.19	0.00	23	0.80	0.14	123	2.32	0.15	Todo	3.88	0.07	12	1.73	0.17
Todo	7.95	0.01	1	18.22	0.00	1	0.94	0.13	3	4.48	0.05	135	8.10	0.01	123	3.22	0.08
12	12.39	0.00	13	19.04	0.00	2	1.34	0.11	135	4.89	0.04	13	8.95	0.01	3	3.72	0.06
1	13.35	0.00	3	19.98	0.00	13	1.72	0.09	23	5.22	0.04	1	12.13	0.00	135	4.91	0.03
3	13.41	0.00	2	20.39	0.00	12	2.05	0.08	1	28.34	0.00	23	14.31	0.00	Null	5.04	0.03
23	13.90	0.00	12	20.91	0.00	123	2.62	0.06	12	29.39	0.00	3	19.62	0.00	23	5.59	0.02
236	16.30	0.00	123	22.05	0.00	135	8.70	0.00	Null	45.45	0.00	2	24.68	0.00	2	6.99	0.01
2	28.46	0.00	23	22.41	0.00	Todo	18.13	0.00	2	45.92	0.00	Null	32.48	0.00	Todo	11.22	0.00
Null	29.44	0.00															

Note: The models are shown with the delta AICs and the weights of each model.

Model labels: 1 = gender, 2 = total weekly hours worked, 3 = total jobs, 4 = gender: total weekly hours worked, 5 = gender: total jobs, 6 = total weekly hours worked: total of jobs, 7 = gender : total weekly hours worked : total jobs

Source: own elaboration.

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A deeper analysis shows that in terms of salary in relation to gender, although in some countries there is a tendency in which the male gender seems to earn slightly more, in no case is this difference significant. On the other hand, if we focus on this, it is observed that in some countries such as Chile or Mexico, the postgraduate degree has significance in the construction of salaries, although this significance is not sustained in all the countries studied. As for the number of jobs, a trend is repeated that indicates that the greater the number of jobs, the higher the level of income, although the only countries where there is any significance in this sense are Argentina and Peru. All this information is summarized in Figure 2.

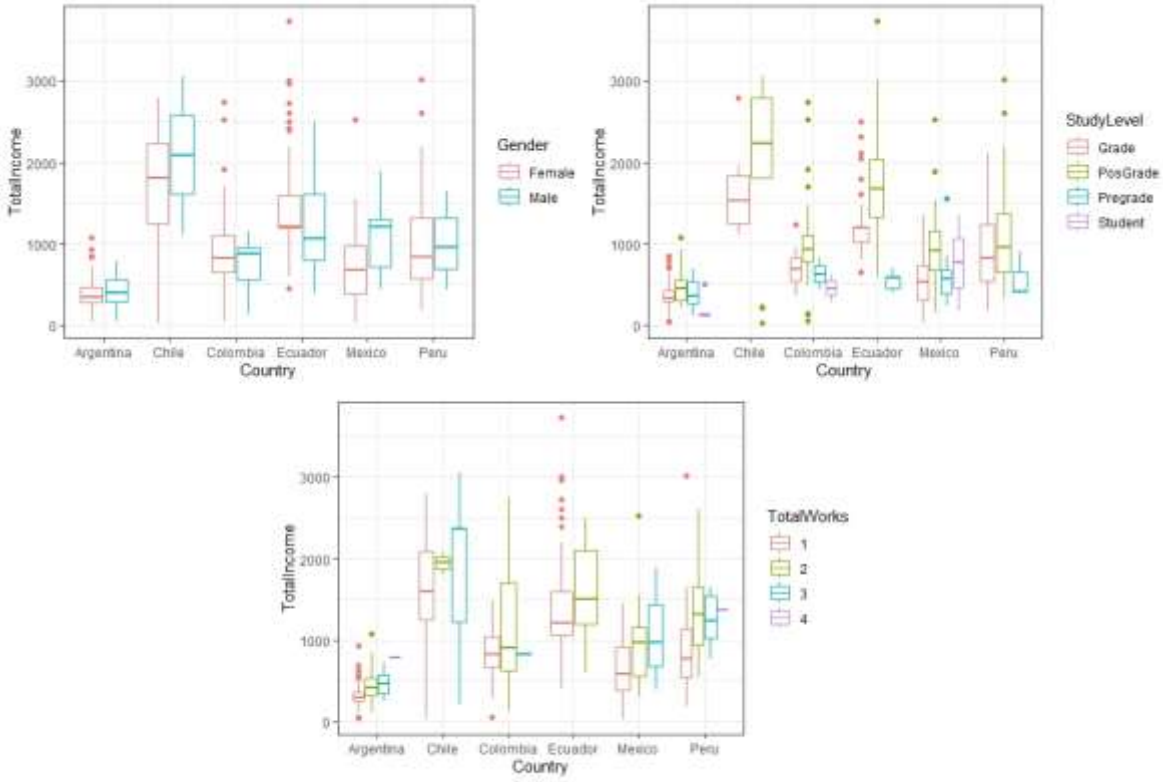

Figure 2. Box – plot of the categorical variables included in the generalized linear models

(*Source: own elaboration)*

A more detailed study of the quantitative variables analyzed in the generalized linear models shows that seniority is a variable that correlates more positively in Ecuador, Peru and Mexico. While with respect to total hours worked, the countries where the highest correlation is observed are Colombia, Argentina and Peru. This information is summarized in Figure 3.

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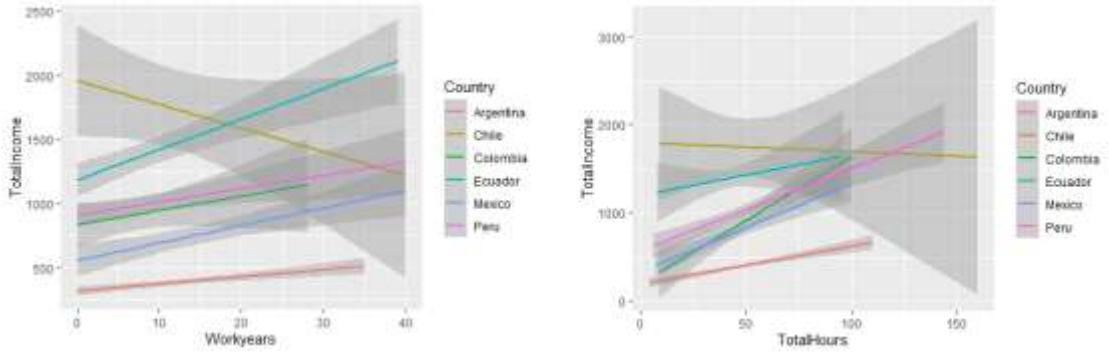

Figure 3. Linear regression plots of the quantitative variables included in the generalized linear models (*Source: own elaboration)*

4. Discussion

The data presented show that the labor markets of the Latin American (LA) countries represented in the study share some similar characteristics. These characteristics include the existence of a feminized workforce, with a young average age between 24 and 44 years, high levels of university education, high levels of hiring, with links to public institutions, preferably located in hospital units, with incomes above US$500 per month, and with ample social coverage, benefits and health insurance. However, there are countries with specific differences in some of the characteristics presented. As in most countries, in the LA region, health systems are the most important employers of nursing personnel, with special emphasis on the role of public institutions (Cassiani et al., 2015). However, in most of these countries, health system reforms have been carried out since the 1990s that promoted private participation in the provision of hospital services, and in some of them included first and second level of care services (Báscolo et al., 2018; Laurell, 2016).

It is important to note that health markets, including labor markets, are imperfect markets that depend on state involvement for regulation. In some Latin American countries, private participation in the provision of health services has been consolidated and has even taken a leading role, as in the case of Colombia (Vargas-Bustamante & Méndez, 2014). The coexistence of public and private institutions requires the State to regulate all stages of the productive chain of the service, including the forms of linkage of health personnel with the institutions. In recent decades, it is also observed how public institutions incorporate mechanisms of linkage with their workers and managers similar to private models (Alford & Greve, 2017).

A trend recognized in all participating countries in the region has been the increase in the levels of training of nursing personnel led by Brazil and Mexico, where several studies have shown this behavior (Squires, 2011; Silva & Machado, 2019; Cedeño et al., 2022). The data presented are consistent with this trend since the sum of nursing personnel with undergraduate and graduate studies in the results presented oscillates around 80%. This social investment, made to improve the theoretical and practical nursing competencies, should be reflected in the labor market conditions, but the data presented show the existence of a great diversity of labor dimensions that do not correspond to an improvement of these conditions.

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The shortage of nurses, deficits in qualification levels and/or recognition, moonlighting, the relative disadvantage and devaluation of nursing within health teams, add problems to the challenges common to all health workers. (Aspiazu, 2012; Pereyra, 2014; Pereyra & Micha, 2015).

In addition, there are demographic characteristics that should be considered in this analysis. The results of this research in terms of gender confirm that the nursing staff is mostly female, however, there is the incorporation of men into the labor market that is increasing, for example, in Argentina. The other characteristic is age, the data show that although the intermediate age category is the most prevalent, in some countries there are ages close to retirement (60 years and over), which raises the need to plan for generational replacement (Wieck et al., 2010) which is a complex and uncommon exercise in the region. It is also necessary to take into account that it is evident that the majority of nursing staff are married and in common-law unions, and have children, which makes it necessary to expand part-time jobs that can allow nursing staff to adjust to these responsibilities (Muñoz-Sánchez, 2017).

In all countries there is a significant percentage of unemployed nurses. This condition of unemployment is a component that exists in virtually all labor markets, with Ecuador being the country with the highest volume among the participating countries. However, it has been found that the percentage of unemployment in nursing is higher than in other categories of health workers (Montañez-Hernández, 2020). Given the condition of unemployment, a plausible attempt to reintegrate into the market as soon as possible is to seek mechanisms for the development of managerial, academic, scientific and technical skills.

High percentages of individuals (80%) reported being linked to the market through contracts. However, on average, only half of those hired reported having a permanent contract. The rest are subject to a wide variety of contract types that do not include employment benefits or affiliation to social security institutions. Two countries stand out for having the lowest percentages of permanent contracts, Colombia (34.3%) and Peru (24.5%). These data raise implications in relation to the restructuring of labor markets, which have gone from institutionally binding workers permanently to exposing them to competition and the search for multiple links in the market (Jaramillo et al., 2019). In particular, the case of Colombia reflects the competitive principles incorporated by the 1993 health system reform.

In most of the countries reported, participants indicate being linked to public institutions with a high average percentage (around 80%), with the exception of Colombia, which only reaches 46.8%. This percentage is linked to the phenomenon mentioned in the previous paragraph in which competition and multiple linkages are part of an employment model that promotes the expansion of the private sector of the market (Pillay, 2009). Most of the private employer institutions in Colombia, as in other countries, are for-profit, but in the rest of the countries private non-profit institutions (civil society organizations) are also observed as important employers.

Location in relation to type of unit is dominated by hospital affiliation on average in the region and in almost all countries except Chile. In addition, several countries place about 20% of their nursing staff in primary care units. A fundamental condition for countries to transfer or strengthen their service structure at the first level of care is that their nursing staff be located at that level. In most countries, nursing education promotes insertion in the hospital setting (Balseiro Almario et al., 2012; Mejía et al., 2012). It is possible to consider

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the first level of care as the eventual domain of nursing and if the mobilization towards the Primary Health Care model expands, the role of the autonomous nurse and leader of decisions and processes could also do so.

In general, the countries show a concentration of weekly working hours in the intermediate category. The country with the highest percentage of hours in the upper category (more than 48 hours) is Colombia, which can be attributed to the effect of the variables analyzed above, particularly work in private institutions and the lower volume of permanent contracts. In the declaration of overtime (unpaid), Colombia again appears with the highest percentage of people (68.7%). Although it represents a subjective perception, the indicator is added to others with concrete references to reality, so it can be understood as one more manifestation of the type of labor market existing in the country (Bae & Fabry, 2014).

The reported existence of work-related social benefits is above 80% in all countries except Colombia. In other countries, a deterioration of working conditions has been reported, clearly expressed by the lack of benefits (Ponder et al., 2021). The lowest percentages of social security affiliation are found in Chile and Colombia. The relevance of these two indicators lies in the fact that the conditions for the supply of contracts or jobs have been weakening due to the phenomenon of labor precariousness. The classical theories of labor markets should be enriched by incorporating this type of phenomenon that has a clear effect on the composition of the markets and that its potential progress implies challenges for those graduating from nursing schools in search of employment options in the coming years.

The modeling of the variables with respect to salary highlights mainly that issues such as the level of studies, seniority or the number of jobs held by professionals represent the main ones. In second place is gender, as this is a profession performed mainly by women, which is not a minor issue. In any case, the level of representation of men is low, so expanding the sample level within this group may improve the results of the models.

The study has several limitations, so the judgments and conclusions should be considered with caution as representative of the reality of nursing work in the region, however, they fulfill the objective of functioning as a good overview of the working conditions of nursing professionals in different Latin American countries.

5. Conclusion

This study provides primary information on the labor reality faced by nurses in Latin America. The findings reveal that, despite regional variability, there are shared trends such as the predominance of a female workforce and graduate degrees, which do not necessarily translate into improved working conditions or job stability.

There is notable variability in wages, highlighting economic disparities within the region. In terms of working hours, most comply with a standard workday of 36 to 48 hours per week. A worrisome lack of contractual formalization is evident, as a quarter of actively employed participants do not have a formal contract.

These findings underscore the need for labor policies that address equity and formalization of employment, as well as standardization of workloads to ensure fair and sustainable working conditions. Active involvement of nurses in labor policy formulation becomes imperative to promote a safe work environment and favorable conditions that resonate with population needs and identified challenges. Collaboration on well-targeted

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policies is crucial to direct efforts towards improving the quality of health care and labor equity in the region.

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