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Nursing and Their Role in Pakistan: Challenges, Contributions, and Prospects for Strengthening the Healthcare System

Khadija[1], Nosheen Alamgeer[2], Kalsoom Ishfaq[3], Kainat Anwar[*4]

1 Nursing officer, Social Security Hospital Faisalabad, Pakistan. Email: haniafatima065@gmail.com

2 Nursing Officer, Faisalabad Teaching hospital, Gulam Muhammad abad, Faisalabad, Pakistan. Email: noshinusman1993@gmail.com

3 Nursing Officer, Allied Hospital -1, Faisalabad, Pakistan. Email: kalsoomishfaq255@gmail.com

4 Nursing Officer, Allied Hospital -1, Faisalabad, Pakistan.

*Corresponding Author Email: kainatgill315@gmail.com

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Abstract

Nursing is an integral part of the healthcare system, which is fundamental to patient care, disease prevention, health education, rehabilitation and public health promotion. The range of communicable and non-communicable diseases, insufficient health care facilities and the continuous shortage of trained medical staff have given the nursing profession more importance in Pakistan due to population growth. Nurses play a crucial role as a bridge between patients and doctors, between hospitals and homes, and between health care systems and the community, especially in rural and unserviced areas where health facilities are not as accessible. Though nursing has a significant contribution, the nursing professionals are still suffering from a lot of difficulties such as lack of educational facilities, lack of salary, inadequate working conditions, professional discrimination, gender stereotyping, and lack of institutional recognition. The article reviews the evolution of nursing in Pakistan and its current relevance, looks at the role of nursing in the national healthcare system and discusses the challenges of institutions, education, economy and society in the nursing profession. This article aimed to review the evidence of the roles, challenges and contributions of nursing in Pakistan; secondly, quantify the size and provincial distribution of the registered nursing workforce; and thirdly, identify policy options to strengthen the registered nursing workforce in Pakistan. A structured narrative review and a secondary-data cross-sectional analysis were used. Data on registered nurses by province were taken from the Pakistan Nursing Council (PNC/PNMC) online statistical report. The Population and Housing Census of 2023 were the source of the denominators. Results are the number of nurses per 1,000 population; the percentage of nurses in a province versus the percentage of population; location quotient; chi-square goodness-of-fit test; Poisson rate ratio; and benchmark-based shortfalls. It suggests that better nursing education, professional recognition, protection in the workplace, and career opportunities both within and outside the health system are imperative to secure a functional, accessible and sustainable health system in Pakistan.

Keywords: Nursing workforce; Pakistan; health workforce shortage; provincial disparities; Pakistan Nursing and Midwifery Council; health system strengthening

1. Introduction

Human development, social stability, and national progress cannot be achieved without having access to healthcare services. In addition to hospitals, doctors, medicines and modern medical technologies being available, good health systems are also supported by a skilled and well-trained nursing

workforce. Nursing is one of the most crucial sectors in the healthcare sector, as nurses are responsible for providing uninterrupted care to patients, keeping a watch on their health, administering medication and helping prevent and control illnesses. They work and serve outside of the hospital wards to provide community health services, maternal and child health care, vaccination services, emergency response, public health education, etc. The importance of nursing has significantly grown in Pakistan as a result of a high population, imbalance in healthcare facilities, and ongoing pressure on public hospitals. Nurses often have to carry out strenuous duties and work under difficult conditions, especially in government hospitals where patients are often far outnumbered by medical staff. However, they have not always been given proper institutional recognition, remuneration and social appreciation for their professional work. Thus, nursing profession needs to be paid more attention in the policies of health care, planning of education and development of Pakistan.

Nurses are the largest group of health care workers in the world and a cornerstone of universal health coverage. According to the World Health Organisation (WHO, 2020), in the world there are 27.9 million nurses and approximately 5.9 million are missing, mainly in LMICs. Research in higher-income countries demonstrates associations between improved nurse staffing levels and a more highly educated nursing workforce with reductions in in-hospital mortality rates (Aiken et al., 2002; Aiken et al., 2014). As a developing country, Pakistan has over 241 million people (Pakistan Bureau of Statistics (PBS) 2023). It has a density of physicians, nurses, midwives and lady health visitors of approximately 1.4 per 1,000, which is also significantly lower than the threshold for universal health coverage, which is 4.45 physicians, nurses, midwives and lady health visitors per 1,000 (Ministry of National Health Services, Regulations and Coordination [MNHSRC], 2018). The nurse-to-doctor ratio is the inverse of international recommendations (2:4 nurses per doctor) (The Express Tribune, 2025; Hussain, 2019). This article poses three questions. What is the role and contribution of nursing in Pakistan? What is the size of the registered nursing workforce, and what is the distribution of registered nurses in Punjab, Sindh, Khyber Pakhtunkhwa and Balochistan? What reform(s) would be most likely to make it stronger?

2. Literature Review

2.1 Institutional and Regulatory Context

The Pakistan Nursing Council was set up in 1948, and constituted by law in 1952 and 1973; it registers nurses, midwives, lady health visitors (LHVs) and licensed practical nurses (LPNs), and designs training programmes. Now it is working as the Pakistan Nursing and Midwifery Council (PNMC). The Higher Education Commission was involved in degree accreditation, as well as a source of variable enforcement (CAREC, 2026). This was changed to a four-year generic BSN as an entry qualification in 2019 by the PNC (The Express Tribune, 2019). However, there is still room for improvement in the public sector, as one regional review found that approximately 5% of public sector nursing graduates in Punjab have a BScN (CAREC, 2026).

2.2 Size and Density of The Workforce

The slow growth is attested by historical estimates, which were 32,000 persons per nurse in 1960 and 5,199 persons per nurse in 1997 (historical estimates “Nursing in Pakistan,” n.d.). Later figures vary by source and definition: 90,276 nurses in the Economic Survey 2015–16 (The Express Tribune, 2016), 116,659 in 2020 (“Nursing Shortage in Pakistan,” 2023), and 107,643 reported by the PNMC, equal to about 0.45 per 1,000 (Iqra University, 2026). According to the PNMC portal, there were 202,700 registered professionals in six categories, of which 124,004 (61%) were registered nurses (PNMC, 2026). Densities around 0.49 per 1,000 (including LHVs and midwives) are provided by figures that count these alongside nurses (The Express Tribune, 2018). Some sources quote “4.4 nurses per 1,000” (CAREC, 2026). This is not consistent with registry data and seems to be a decimal moved.

2.3 Needs and Shortages

It is required that by 2030, there should be 942 000 nurses and midwives in the country, and it was observed that only about 9 000 nurses and midwives are being produced annually (MNHSRC, 2018; Pro-Pakistani, 2018). The national shortage stands at 1.4 million or 0.7 million (depending on the benchmarks) nurses (Hussain, 2019; Gulf News, 2025). The nurse/patient ratio of 1:40 in general wards is considered high in Pakistan, as per the recommendation of the Pakistan Nursing Council (PNC) of 3:10 ("Nursing Shortage in Pakistan," 2023). The mid-level health workers are also quite low, with only 0.7 midwives per 10,000 people, which includes community midwives, LHVs and midwifery-trained nurses (Pakistan Business Council, 2025).

2.4 Migration and Retention

Gulf countries and other nations are seeking Pakistani nurses. The Express Tribune (2025) and Gulf News (2025) reported that the number of Pakistani nurses registered overseas increased by 54.2% compound annually from 2019 to 2024. The government of Punjab reported that approximately half of the new graduate nurses departed the country in 2022–23 (CAREC, 2026). To counter the shortage of qualified medical personnel, smaller private hospitals are offering these jobs to semi-qualified individuals on low salaries ("Nursing Shortage in Pakistan," 2023).

2.5 Geographic and Social Inequality

The income-related inequality in the allocation of health human resources in Pakistan has been documented at district level (Income-related inequality, 2021). Disparity in stock and pipeline is reported at a provincial level. Approximately 1330 nurses and midwives per year were produced by the nurses and midwives and it would take more than 10 years to fill the provincial deficit (The Express Tribune, 2018b). Gender norms influence the gender profile of a profession, where women are said to dominate BSN classes, and some patients have preferences for female nurses (The Express Tribune, 2014).

2.6 Gap in the Literature

There is poor integration of existing sources, such as press reports, planning documents, and small studies. Few people use consistent registry data to compare the provinces on a per capita basis with clear statistics. This article addresses that gap.

3. Research Methodology

3.1 Design

The study is a structured narrative review and descriptive and inferential secondary data analysis (cross-sectional, ecological). Ethical approval was not required as no humans were involved.

3.2 Literature Search

A targeted search was conducted on the regulator and government websites (PNMC, MNHSRC, PBS, Pakistan Economic Survey) as well as WHO publications, indexed journals and national and regional news sources in November 2026. The sources were included if they provided nurse counts, nurse ratio, nurse education capacity, migration or policy about Pakistan. When there was disagreement among the sources, data collected in the registry was preferred. This was not a systematic review (PRISMA), and the results presented in Section 2 should be interpreted as a narrative synthesis.

3.2 Data sources

Variable	Source
Registered nurses by province and sex ("Nurse" category)	PNC online statistical report
National registered nurses, latest	PNMC online portal (2026)
Provincial and national population	2023 Population and Housing Census (PBS, 2023)
Benchmarks	WHO and Pakistani planning documents (see 3.4)

The provincial PNC counts were: Punjab 57,995; KP 16,369; Balochistan 1,583; Sindh 27,653; ICT 805; AJK 901; Northern Areas 92; ex-FATA 135; Gilgit-Baltistan 811. Ex-FATA 135 was added to KP to make it into the census boundary, resulting in KP 16,504. AJK, Northern Areas and Gilgit-Baltistan are not included in the provincial analysis as the population in the 2023 census is only 241,499,431 for the four provinces and the ICT. Analysed workforces are thus 104,540 nurses.

3.3 Variables and Statistical Methods

1. Registered Nurses per 10,000 population.
2. Distribution - proportion of nurses in each region and proportion of population in each region, and LQ (location quotient; LQ < 1 represents under-supply). Goodness of fit: Chi-square test comparing the distribution of nurses observed to the distribution expected if they were distributed equally according to the size of the population (df = 4), standardised residuals.
3. Rate ratio: Balochistan's density compared to the rest of the country, with a 95% confidence interval based on the standard error of the Poisson log-rate ratio.
4. Dispersion: coefficient of variation (CV) of provincial densities. The number of shortfall nurses is the population x the benchmark number. The minimum that is mentioned in the reporting in Pakistan for scenario A is 2.5 nurses per 1,000, which is just as it is mentioned in some other reports (The Express Tribune, 2023). Intermediate goal B (1.0 per 1,000) is set as an inter-stage target by the authors for illustrative purposes only.
5. Trend: compound annual growth rate (CAGR) in national register. The calculations were carried out in a manual manner from the inputs given. Since the registry numbers are a near-census and not a sample, p-values are reported but effect sizes (LQ, rate ratio) carry their interpretation.

Calculations were performed by hand from the stated inputs. Because registry counts are a near-census rather than a sample, p-values are reported but effect sizes (LQ, rate ratio) carry the interpretation.

3.4 Limitations of The Data

The PNC register does not include the number of active practitioners. The province of registration does not necessarily have to be the province of work and registrations can encompass emigrants and non-practising nurses. The provincial snapshot is prior to the PNMC's new national figure of 124,004 nurses and a provincial breakdown of the total was not available. The restrictions put on these limits are addressed in Section 6.

4. Results

4.1 Provincial nurse Density

Table 1. Registered nurses, population and density by region

Region	Registered nurses	Population (2023)	Nurses per 10,000	Nurses per 1,000
Punjab	57,995	127,688,922	4.54	0.45
Sindh	27,653	55,696,147	4.97	0.50
Khyber Pakhtunkhwa (incl. ex-FATA)	16,504	40,856,097	4.04	0.40

Region	Registered nurses	Population (2023)	Nurses per 10,000	Nurses per 1,000
Balochistan	1,583	14,894,402	1.06	0.11
Islamabad Capital Territory	805	2,363,863	3.41	0.34
Total (4 provinces + ICT)	**104,540**	**241,499,431**	**4.33**	**0.43**

By a long way Sindh had the highest registered density while Balochistan had the lowest. The density of Balochistan was 4.7 times lesser than of Sindh, 4.3 times lesser than Punjab and 3.8 times lesser than KP. The coefficient of variation for the four densities across the provinces was 48.4% signifying that the data were very dispersed. With ICT added to this, it drops to 42.6%.

4.2 Share of nurses Versus Share of Population

Table 2. Distribution and location quotients

Region	Share of nurses	Share of population	LQ	Expected nurses*	Standardised residual
Punjab	55.5%	52.9%	1.05	55,274	+11.6
Sindh	26.5%	23.1%	1.15	24,110	+22.8
KP	15.8%	16.9%	0.93	17,686	−8.9
Balochistan	1.5%	6.2%	0.25	6,448	−60.6
ICT	0.8%	1.0%	0.79	1,023	−6.8

Expected under population-proportional allocation of the 104,540 registered nurses.

The distribution was not randomly distributed as expected, χ^2 (4, N = 104,540) = 4,450, p < .001. About 3,670 of the 4,450 chi-square units (82%) were contributed by Balochistan. Its density was 1.06 per 10,000 against 4.54 per 10,000 in the rest of the country, a rate ratio of 0.23 (95% CI 0.22–0.25). That is to say Balochistan has less than ¼ of the number of Nurses per head compared to the rest of Pakistan. Sindh, Punjab is over proportional and KP and ICT is under. But these differences are statistically significant at this sample size and are not practically significant in comparison to the deficit of Balochistan.

4.3 Shortfall Against Benchmarks

Table 3. Estimated nurse requirement and shortfall

Region	Required at 2.5 per 1,000	Shortfall (A)	Coverage (A)	Required at 1.0 per 1,000	Shortfall (B)
Punjab	319,222	261,227	18.2%	127,689	69,694
Sindh	139,240	111,587	19.9%	55,696	28,043
KP	102,140	85,636	16.2%	40,856	24,352
Balochistan	37,236	35,653	4.3%	14,894	13,311
ICT	5,910	5,105	13.6%	2,364	1,559
Total	**603,748**	**499,208**	**17.3%**	**241,499**	**136,959**

In Scenario A, the registered workforce is able to provide 17.3% of the national need and 4.3% in Balochistan. In Scenario B, the small target of 60 per cent of the population suggests that we would still be short approximately 137,000 nurses on a national level, while Balochistan would require around nine times its current figure to achieve that target.

4.4 Can Current Production Close The Gap?

Around 499,000 nurses and midwives are needed in the country by 2038 (Scenario A) and approximately 9,000 were produced annually in 2018, which would require about 55 years to close the gap if there was no emigration, no attrition and a static population. If production were increased to 18,000 per year, it will take approximately 28 years more. The population growth of 2.55% per year

(PBS, 2023) increases the needs of nurses for the Scenario A by approximately 15,400 nurses each year, which is more than what is produced. With these assumptions, the gap will continue to grow rather than shrink if we don't expand training capacity and/or retention.

4.5 National Trend

Table 4. Registered nurses, selected years

Year	Registered nurses	Source
2015	90,276	Economic Survey 2015–16
2020	116,659	Economic Survey 2020–21
c. 2022–23	106,344 (all regions)	PNC statistical report
2026	124,004	PNMC portal

The register grew at about 5.3% per year from 2015 to 2020 and about 1.0% per year from 2020 to 2026. The latter is lower than the 2.55% growth rate in the population, suggesting that per-capita nurse supply is not increasing, or even decreasing. This trend is only indicative, as series definitions vary and registers are cleaned up periodically.

4.6 Gender and Training Capacity

The sex of the person registered on the register was given as female on 79% of the registers and as male on 21% (106,302 with sex recorded, 106,302 nurses of whom 22,691 were male). The male share varied: Sindh 43.1%, KP 38.3%, Balochistan 31.2% and Punjab 6.2%. The high male share in Sindh and KP is the reason for Sindh's registered density being higher than what was reported previously. A number of earlier press reports had accused Sindh of being the worst served province (The Express Tribune, 2014; “The Heart of Healthcare Systems,” n.d.), but the register has shown that it is the highest. This could be indicative of the registration culture in Karachi and the strong private sector. The comparison is not conclusive.

58 nursing schools were reported in Punjab, 45 (19 public and 26 private) in Sindh and 14 in KP and eight in Balochistan for a total of 3,060 candidates per year. (The Express Tribune 2019) This is approximately 4.5 schools per 10 million population in Punjab, 8.1 in Sindh, 3.4 in KP and 5.4 in Balochistan. This is because the school density is not the lowest in Balochistan, indicating that the limiting factors here are school size, faculty, applicants, and retention and deployment of graduates and post-training, rather than school numbers. This is because the number of the institutions providing nursing education varies from one definition to another and from one year to another, as reported by the Punjab officials about 44 institutions in 2025 (Gulf News, 2025).

5. Discussion

5.1 Roles and Contributions of Nursing

The role of nurse in Pakistan is to attend patients at the bedside in hospitals, operate critical care and emergency units, assist during surgery and anesthesia, and offer infection prevention. LHVs and community midwives provide maternal and newborn care, immunisation and family planning to areas where doctors are not available in primary and community care. Nurse educators and managers set the standards of practice in the clinical setting. In time of crises like epidemics, floods and displacement, nurses constitute the bulk of the frontline responders. International studies have shown that there is a link between adequate staffing and fewer preventable deaths, and better qualifications and fewer preventable deaths (Aiken et al., 2002; Aiken et al., 2014). The contribution of midwives and nurses in Pakistan is particularly important, as the country has some of the highest maternal and neonatal indicators in the world, and a neonatal mortality rate (NMR) is also high (Pakistan Business Council, 2025).

5.2 Why the Shortage Persists

The findings suggest the following five interwoven causes.

1. Low production: An estimated 9,000 nurse and midwives per year (2018) compared to a need of approximately 15,000 per year.
2. Pipeline quality: This is a challenge to faculty and clinical placements because standards are higher with the 4-year BSN, and there are still many graduates with lower qualifications (CAREC, 2026).
3. Emigration: high demand abroad and the biggest impact in areas with weak training capacity.
4. Skill-mix and governance: lack of enforcement of norms in staffing, multiple regulators, the doctor-to-nurse ratio inverted, and staffing reliance on semi-qualified personnel in the private sector.

5.3 Provincial Interpretation

Punjab has the greatest absolute stock as well as the greatest absolute shortfall (~261,000 under the Scenario A). It is the prime location for training and has attracted the largest amount of financing for reform, including a USD 150 million programme to reform the nursing and health workforce in the Punjab, funded by the Asian Development Bank (CAREC, 2026). Retention of graduates is its key challenge.

The density is the highest in Sindh and has a high absolute difference. There are several potential explanations for this large private sector and urban–rural imbalance that were not tested with these district data, such as concentration in Karachi. KP has below proportional representation, and a well-documented slow training pipeline, with provincial estimates of closing this gap taking more than a decade at existing production (The Express Tribune, 2018b). The security situation and the integration of the erstwhile FATA make it complex. Balochistan is the exception. It has the lowest density, LQ and coverage, the highest rate of population growth (3.2% per year), and the largest geography and low population density (PBS, 2023; Pro-Pakistani, 2024). There are challenges in staffing facilities there and few incentives for graduates to remain. School size is not the answer.

5.4 Policy Implications and Prospects

1. **Promote the expansion and upgrading of education**. Increase BSN intake, faculty and clinical placements. Implement bonding, scholarships and quota seats in under-served districts in Balochistan and southern KP.
2. **Target Balochistan explicitly.** Province a nurse-density target, provide hardship and rural allowances, establish regional nursing colleges/housing, and recruit locally from districts with the goal of sending them home.
3. **Retain the workforce.** Adjust wages and pathways, establish clinical specialist and advanced practice options, optimize safety and staffing and implement, managed bilateral labour agreements which allow retraining in wages and returns with skills.
4. **Fix the data**. Connect the PNMC register to Practice Location, employer and licensing renewal. Provide estimates of the number of active nurses, not just the number that have registered, at the province and district level, each year.
5. **Regulate and skill-mix.** Define the responsibilities of the PNMC and Higher Education Commission, bring in minimum staffing norms in public and private hospitals and eliminate unqualified practice.
6. **Increase status and diversity**. The increased recognition, leadership opportunities for nurses in health policy and the recruitment of nurses on a gender-sensitive basis can attract more participants. In Sindh and KP the male nurses are already a significant proportion.

7. **Use the Human Resources for Health Vision** – 7. Link provincial plans to the 2030 targets, monitor against these targets annually and allocate funding to these targets in provincial budgets (MNHSRC, 2018).

6. Limitations

Ecological analysis, with the use of registry counts, overestimates the number of active workers. Province of registration DOES NOT equal the province of practice. The provincial data are from before the most recent national total was calculated and the number of 2.5 per 1000 is one of the many figures quoted, rather than a WHO standard. A scenario B is an example that the author has drawn up. Population denominators for provinces were based on the census taken in 2023, without AJK & Gilgit-Baltistan, thus these regions were not analysed. Education-capacity data is from 2019 and not complete. The literature review was narrative, not systematic, and in part based on press sources; these should be replaced with peer and/or primary data, where available or possible. Moving forward, active and available nurses should be included in district-level data, as well as vacancies and sanctioned post data, and the impact of BSN transition for 2019 should be explored.

7. Results:

106,344 nurses were registered in the register throughout the country. The national density was 4.33 per 10,000 (0.43 per 1,000) for four provinces and Islamabad Capital Territory (ICT). The Provincial densities were Sindh (4.97), Punjab (4.54), Khyber Pakhtunkhwa (KP, including ExFATA) (4.04), ICT (3.41) and Balochistan (1.06). The Balochistan population accounts for 6.2% of the population, but only 1.5% of the nurses and is 0.23 times as dense compared to the rest of the country (95% CI 0.22–0.25). The distribution was significantly different from the population proportional ($\chi^2(4) = 4,450$, $p < .001$). The national nursing shortage was approximately 499,000 (17.3% coverage) against an illustrative benchmark of 2.5 nurses per 1,000. Emigration, lacking good education line, gender imbalance and low status are also challenges for the labor force.

8. Conclusion

Pakistan's health system is based on nursing, but it is also one of the most under-resourced sectors of the system. The national density of RNs is approximately 0.43 RNs per 1,000 persons, and there is a significant lack of equity in distribution. The density of Balochistan is approximately a quarter of that of the rest of the country and each province is far below the illustrative benchmark of 2.5 per 1,000. With current production, the gap will not close, and will even increase. A massive, sustained increase in nursing education, credible retention systems, improved data and regulation, and province-specific strategies, with a concerted effort in Balochistan, are needed to strengthen the system. Nursing is an integral part of Pakistan's health care system and has a pivotal role in enhancing the health and wellbeing of its people. Nurses provide patient care, maternal and child health services, disease prevention and control, community health services, emergency services, and public health education. They are especially crucial in a nation where medical resources and staff are not evenly distributed and public hospitals remain very strained. Despite this, the nursing profession is still hampered by the lack of workers, the lack of institutional resources, insufficient nursing salaries, gender stereotype and lack of nursing recognition. While these challenges demand serious attention by policy makers, educational institutions, health administrators and society in general. An effective and sustainable healthcare system in Pakistan is impossible without reinforcing the skills of nursing. These should thus be the focus of national healthcare policy: investment in nursing education, better working conditions, professional autonomy, protection in the workplace, and institutional recognition. Therefore, nursing development cannot be just an issue of occupation or education, it is the need of social welfare, human development and building a well accessible and equitable health care system in Pakistan.

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