

Exploring the Scope of Public Health Nursing Practice in Sri Lanka: A Research-Based Approach

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Abstract

Background: Globally, Public Health Nurses (PHNs) play a central role in disease prevention and health promotion. In Sri Lanka, the PHN service, discontinued in the 1980s, was reintroduced in 2018. However, a standardised framework for defining, implementing, and documenting their roles and services is still lacking, despite record-keeping being vital for evaluating service delivery. This study aimed to describe the duties performed by Sri Lankan PHNs.

Methods: A descriptive cross-sectional study was conducted among the PHNs working in 08 provinces in Sri Lanka during October 2024. Data collection was performed using a pre-tested, validated, self-administered questionnaire, and the results were analysed descriptively.

Results: Of 171 eligible PHNs, 127 responded (74.3%). Within the month, almost all (99.2%) delivered NCD prevention, running 1,183 screening clinics (median 8 per nurse) and registering 10,822 people (median 71 per nurse). In palliative care, 94% conducted 1,518 home visits (median 8), commonly providing catheter care (76.4%), wound care (59.8%), and NG feeding (48.8%). For geriatric services, 74.8% of patients received home-based care (744 visits), and their blood pressure was monitored (1,371 instances) and blood sugar levels checked (1,275 instances). Health promotion was universal, with 85% of the population contributing to mental healthcare. Although 83.5% of PHNs had attended in pain management, only 41.7% assessed pain, and 37.8% administered prescribed analgesics. Disaster management (4.7%) and research engagement (13.4%) were limited. Service volumes varied by district, with higher pain-management activity in Nuwara Eliya and Ratnapura. Female PHNs more often attended bereavement sessions and mental healthcare ($p=0.036$; $p=0.025$), while older age correlated with longer travel for mobile clinics ($r_s=0.201$) and more elderly home visits ($r_s=0.220$).

Conclusions: PHNs in Sri Lanka make strong contributions to NCD prevention, health promotion, and palliative care, with additional roles in elderly and mental healthcare. Yet, their involvement in pain management, disaster response, and research remains limited. Clearer role definitions, more PHN recruitments, targeted capacity building, and a workforce need assessment are essential to maximise their impact on community health.

Background

Public health nursing represents a unique blend of nursing, social, and public health sciences, dedicated to promoting and protecting the health of entire populations. [1]. Unlike traditional hospital-based nursing, public health nurses (PHNs) primarily focus on disease prevention, health promotion, and rehabilitation[2, 3] while reducing health disparities in underprivileged communities, and enhancing overall public health[3]. Accurate and continuous record-keeping of public health nursing services is crucial for evaluating their impact, ensuring accountability, understanding community health needs, supporting data-driven decision-making, and shaping future health plans that align with national goals. However, minimal record-keeping and documentation on the PHN service provision have been identified in Sri Lanka, resulting in poor service evaluation and limited service improvement for the country's PHN workforce.

Over the past few decades, healthcare has undergone significant changes in service delivery, technology, and the pursuit of cost-effective care[4]. Currently, the rising burden of chronic disease prevalence and associated complex health status[4] resulting from lifestyle modifications and the increasing elderly population[2, 5] has become a major global public health issue[5]. By 2050, the global elderly population will be 22%, and annual NCD deaths will be 38 million (28 million in Low- and Middle-Income Countries (LMIC))[6]. Additionally, public health was continuously devastated by communicable diseases like malaria, tuberculosis, and HIV/AIDS[2]. Therefore, in the future, all health systems worldwide are likely to face serious challenges[7].

Thus, many countries are seeking effective solutions to manage these emerging challenges[7]. Globally, PHNs are increasingly recognised as key players in improving public health through advocacy, care management, and education[3]. For instance, the United Kingdom (UK) government's public health agenda primarily focuses on enhancing population health by emphasising patients' self-care, evidence-based health promotion, and high-quality care through the integration of PHNs[5], with giving more responsibility, authority, and opportunities in health promotion and chronic patient management after providing enhanced training[8]. Albania has enhanced its PHN services and integrated with public health programs, resulting in better health outcomes and greater equity in healthcare[3]. Enhancing the status of PHNs has been crucial in achieving the Sustainable Development Goals and universal health coverage[2, 7], resulting in improvements in the social determinants of health[7]. Furthermore, the World Health Organisation (WHO) has revealed that 22 countries have operational frameworks to optimise PHN in their health systems[9].

PHNs are well-suited to address the complex health needs of various populations in diverse community settings, as they utilise a blend of clinical expertise, unique community connections, and cultural competence[9–11], ultimately contributing to the overall cost-effectiveness of healthcare and enhancing health outcomes[6].

PHNs play a central role in MCH (maternal and child health), which is a global critical public health priority[2, 12]. Additionally, they play a significant role in home-based palliative care that accelerates stroke recovery [12] and other community-based care[12] across a wide range of healthcare system levels[13]. In primary health care (PHC), the major key roles of PHNs include relationship builder, programme facilitator, outreach professional, intermediary between patients and healthcare systems, and care coordinator [13]. Global disasters are rising, affecting millions of people annually[14], and PHNs are pivotal in healthcare management during such crises[15]. For instance, during the COVID-19 pandemic, PHNs provided comprehensive services through prevention, management, leveraging technology for information dissemination, and promoting family nursing care[7, 16]. Furthermore, they enhance patients' health literacy skills, which is crucial in addressing health issues and improving the quality of patient care[17].

Globally, the roles of PHNs vary. In the United States, PHNs represent the largest segment of public health professionals[18] and they primarily focus on improving population health, while a few PHNs hold leadership positions[18]. In Australia, PHNs emphasise chronic disease management, family healthcare, and outreach to disadvantaged populations, providing essential services such as wound care, palliative care, and assistance with activities of daily living through home visits [19]. In Japan, PHNs play a pivotal role in policy development [13] and have historically contributed to a significant decline in the national

birth rate in the 1950s [20]. Both in Japan and Thailand, they manage community-based geriatric care[21] while Vietnam PHNs mainly engage in family and commune health centre nursing[22]. In Israel, 38% of PHNs had engaged in chronic care, 30% in health promotion, 26% in specialised care and 77% in quality measurement programs[8].

As the health needs of chronic patients become increasingly complex, the role of PHNs has expanded to include more specific roles, such as health promotion, disease prevention, case management, quality monitoring and improvement, advocacy, community-based research, and policy development[5, 8, 10, 23, 24]. Additionally, they have shifted to more collaborative, strategic, and impactful approaches by taking the lead, creating innovative solutions, and leveraging resources and technology to shape the future of healthcare. This has ultimately resulted in a healthier and more equitable society[3, 10]. Sri Lanka could have achieved the best Maternal and Infant Mortality Ratios (MMR and IMR) in the South Asian region, over the last few decades[25]. However, the increasing ageing population and NCD prevalence are major emerging health challenges to the country.

In 1926, PHNs were introduced to Sri Lanka, and they have engaged in MCH, immunisation, and communicable disease control primarily[26, 27]. However, the PHN service was discontinued in the 1980s. However, it was reintroduced in 2018, with expanded roles to address emerging health challenges[27]. Hence, public health nursing is a relatively new discipline in Sri Lanka, and the scope of practice is not yet clearly defined. As a result, the duties performed by public health nurses vary across settings, leading to inconsistencies in service delivery. Despite their critical role, there is a paucity of comprehensive data detailing the duties and responsibilities of PHNs. Understanding the scope of their work is crucial for effective policy development, informed workforce planning, and enhancing the impact of community health interventions. After identifying this gap, we conducted a study to systematically assess the range of duties currently undertaken by PHNs in Sri Lanka. The findings of this research provide an opportunity to discuss their roles and responsibilities critically and to streamline them to establish a standardised, well-defined scope of practice that aligns with the needs of the Sri Lankan health system.

Methods

Aim

The study aimed to describe the scope of duties performed by public health nurses in Sri Lanka.

Study design and setting

A descriptive cross-sectional study was carried out to assess the scope of duties performed by PHNs in Sri Lanka. Sri Lanka is an island in the Indian Ocean, divided into nine provinces comprising 25 administrative districts. The quality of reporting of this study was ensured by following the guidelines for Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) for cross-sectional studies [28].

Study participants, Inclusion and Exclusion criteria

In this study, all the PHNs working in Sri Lanka (as of October 2024) were included, excluding the North Western Province (NWP) of the country, since the administrative approval for data collection was considerably delayed. During the data collection period, there were 217 Public Health Nurses (PHNs) in Sri Lanka, serving in 19 of the 25 districts, as no PHNs had been allocated to the remaining six districts. Of these, 37 worked in the North Western Province, which was excluded from the study; therefore, the total number of eligible PHNs was 171. (Fig. 1). The inclusion criteria were having at least 3 years of work experience as a public health nurse. Those who were retired, pregnant, on special leave, or suffering from a severe physical disease/disability, or experiencing psychological distress, were excluded from the study population.

Data collection

To collect data on performed duties by PHNs during one month (in October 2024), a self-administered questionnaire, which was pre-tested and validated by subject experts, was sent to all PHNs individually via registered post, along with an invitation letter, participant information sheet, informed consent form, and self-addressed, stamped envelopes for returning the completed questionnaires. Before this step, the Principal Investigator (PI) collected the contact details of all the PHNs from the Ministry of Health, contacted the PHNs over the phone and self-introduced, explained about the research purpose, the way of data collection, verbally invited them to join the research and allowed them to clarify any point related to the study. After distributing the questionnaires, time-to-time reminders were sent to the study participants via a social media (WhatsApp) group, which was created by the PI. Return envelopes were used to collect the completed questionnaires directly from individual respondents. Questionnaires were re-posted and emailed the soft copies, too, as strategies to improve the response rate. The survey was conducted from October 2024 to January 2025.

Data analysis

All the survey responses were entered into and analysed using a beta version of SPSS Statistics (version 27.0). Participants' demographic and professional attributes, as well as the questionnaire items, were summarised using descriptive statistics. The median and interquartile range (IQR) or mean and standard deviation (SD) were used to summarise continuous variables. Both percentages and frequency were used to describe categorical variables.

Furthermore, several statistical tests were employed in the data analysis. First, the study variables were tested for normality using the Shapiro-Wilk test. Then, the Mann-Whitney U test was used to assess the associations between variables, while Spearman's correlation test was used to examine correlations.

Moreover, as part of the data presentation, geographical maps were created using Quantum Geographic Information System (QGIS) software (version 3.40 LTR), based on the median values of relevant variables.

Results

Among the 171 eligible participants, 127 public health nurses (PHNs) completed the survey, resulting in a response rate of 74.3%. The 06 Districts (Districts J, K, N, O, P, & Q) where PHNs had not been allocated were not represented in the study and are marked in blue on the map. The highest number of participants came from Colombo District (District A), while Vavuniya (District L), Mullaitivu (District M), and Polonnaruwa (District U) were represented by a single PHN (*Figure 1*).

Socio-demographic characteristics and travel-related details of PHNs for providing care

Characteristics of PHNs

The study participants ranged in age from 30 to 58 years, with a median (IQR) age of 41.0 years (36.0 – 44.0). The majority of PHNs were females (n=120, 94.5%) and married (n=122, 96.1%). All PHNs (100%) were nurses who worked in government hospitals with a median (IQR) prior hospital experience of 11.0 (8.0 – 16.0) years. Further, all of them (100%) had completed the Diploma in Public Health Nursing offered by the government – the Post Basic College of Nursing, Colombo, Sri Lanka – and the median (IQR) service period (years) as a PHN was 3.0 (3.0 – 6.0) (*Table 1*).

Table 1 Characteristics of PHNs of the sample (n=127)

Characteristics of PHNs	
Variable	n (%)
Age	
<35	13 (10.2%)
35-45	86 (67.7%)
46-55	26 (20.5%)
>55	2 (1.6%)
Service period as a hospital nurse (in years)	
<10	49 (39.0%)
10-15	46 (36.0%)
16-20	27 (21.0%)
>20	5 (4.0%)
Service period as a PHN (in years)	
1 year	41(32.3%)
3 years	45(35.4%)
6 years	41(32.3%)
Gender	
Female	120 (94.5%)
Male	7 (5.5%)
Marital status	
Married	122 (96.1%)
Unmarried	5 (3.9%)
No. of children	
No children	12 (9.4%)
01	25 (19.7%)
02	50 (39.4%)
03	38 (29.9%)
04	02 (1.6%)
Completed the Diploma in PHN (Yes)	127 (100%)

Among the 127 participants, 93.7% (n = 119) (95% CI: 89.5% – 97.9%) work in the District where they reside, and the median (IQR) distance from their home to workplace is 9 km (5.0 – 15.0). Furthermore, the majority of PHNs (88.0%, 95% CI: 82.3%–93.7%) reported conducting home visits, while only 66.1% (95% CI: 57.9%–74.3%) of PHNs attended mobile clinics. They travelled a median (IQR) distance of 35 km (2–90) per week to attend home visits and 6 km (0–20) per week for conducting mobile clinics. Further details regarding the socio-demographic attributes and travel-related data are displayed in *Table 2*.

Table 2 Travelling-related details of PHNs for providing care during the month

Variable	Median (IQR)	Min-Max
<i>Distance to workplace from home (in km)</i>	9 (5.0 – 15.0)	0.5 - 62
<i>No. of GN Divisions covered by the service area</i>	15 (10 - 21)	3 - 58
<i>No. of home visits attended (per week)</i>	3 (1 - 10)	0 – 20
<i>Distance to travel for home visits (per week)</i>	35 (2 - 90)	0 – 300
<i>No. of families receiving home-based care in the service area</i>	14.5 (7.8 - 25)	0 – 60
<i>Distance to travel for mobile clinics (per week)</i>	6 (0 - 20)	0 -150

PHN, public health nurse; GN, Grama Niladhari (The smallest administrative unit in Sri Lanka); IQR, interquartile range; SD, standard deviation

Community nursing care provided by PHNs

Under NCD Prevention-related care, almost all the PHNs (99.2% (95% CI: 97.6%–100.0%)) engaged in NCD prevention activities and had registered a total of 10,822 individuals after conducting 1183 NCD screening clinics. Additionally, a median number of 10 (IQR 6-15) awareness sessions and 08 (IQR 3-21) follow-up sessions on NCD prevention were implemented. Health promotion activities included awareness-raising sessions conducted in the community – including health talks, diabetic walks, and self-breast examination programmes – as well as individual teaching/ counselling sessions on NCD prevention. Additionally, caregiver education sessions focused on ADLs (Activities of Daily Living), such as catheter care, NG feeding, wound dressing, and oral care. All the PHNs (100%) had engaged in at least one of the aforementioned health promotion activities. For palliative care, 94% of PHNs had conducted a total of 1518 home visits, 76.4% provided catheter care, 48.8% NG tube feeding and care, and 59.8% performed wound care. In geriatric care, 74.8% of PHNs attended for a total of 744 home visits for elderly care, while only 37.8% of PHNs attended for elderly homes. Furthermore, 85.8% of individuals had their blood pressure monitored, and 77.2% had their blood sugar levels monitored. Moreover, the contribution of PHNs to emergency and disaster management was limited, accounting for only 4.7%. Under pain management, only 41.7% of PHNs assessed and documented pain, 37.8% (95% CI: 29.2%–46.4%) administered prescribed analgesics, and 10.2% administered morphine, respectively. However, 83.5% of PHNs have contributed to overall pain management services, as they have been involved in at least one related activity, such as teaching non-pharmacological techniques to various community groups in different community settings. Addressing the aspect of patients’ mental health by PHNs – including counselling for both the patient and family members – was 85.0%.

Further details about the services provided by PHNs are displayed in *Table 3*.

Tables (The table size >A4 size and to be included within the text under ‘Duties performed by PHNs within one month’)

Table 3 Duties performed by PHNs within one month

Variable	n	Median (IQR)	Min-Max	Sum
NCD PREVENTION-RELATED CARE				
<i>No. of NCD screening clinics conducted</i>	127	8.0 (4 - 15)	0 - 20	1 183
<i>No. of individuals registered under NCD prevention</i>	127	71.0 (40 - 128)	0 - 450	10 822
<i>No. of physical exercise programs</i>	127	4. (2 - 5)	0 - 54	690
<i>No. of awareness sessions conducted on NCD prevention</i>	127	10.0 (6 - 15)	0 - 114	1 798
<i>No. of follow-up sessions conducted on NCD prevention</i>	126	8.0 (3 - 21)	0 - 105	1 262
PALLIATIVE CARE NURSING				
<i>Home visits and Hygienic care</i>				
<i>No. of home visits attended for Palliative Care</i>	127	8.0 (4 - 16)	0 - 50	1 518
<i>No. of bed baths given for Palliative Care patients</i>	127	0.0 (0 - 1)	0 - 15	137
<i>No. of oral care and health education sessions conducted</i>	127	2.0 (1 - 5)	0 - 22	469
<i>Pain management in palliative care</i>				
<i>No. of Pain assessments and documentations done</i>	127	0.0 (0 - 2)	0 - 10	151
<i>No. of cases of morphine administered</i>	127	0.0 (0 - 0)	0 - 4	21
<i>No. of cases of oral analgesics administered</i>	127	0.0 (0 - 2)	0 - 12	135
<i>No. of cases of other prescribed analgesics administered</i>	127	0.0 (0 - 1)	0 - 9	84
<i>No. of awareness sessions conducted on non-pharmacological techniques</i>	127	2.0 (0 - 6)	0 - 20	521
<i>No. of counselling sessions conducted with family members on pain management</i>	127	2.0 (1 - 4)	0 - 25	520
<i>Urinary Catheterisation</i>				
<i>No. of newly inserted urinary catheters</i>	127	1.0 (0 - 2)	0 - 6	157
<i>No. of changed urinary catheters</i>	127	3.0 (1 - 6)	0 - 20	585
<i>No. of urinary catheter care provided</i>	127	2.0 (0 - 7)	0 - 24	590
Variable	N	Median (IQR)	Min-Max	Sum
<i>No. of caregiver education sessions conducted on catheter care</i>	127	3.0 (1 - 6)	0 - 24	561
<i>NG feeding</i>				
<i>No. of newly inserted NG tubes</i>	127	0.0 (0 - 1)	0 - 6	87
<i>No. of changed NG tubes</i>	127	0.0 (0 - 2)	0 - 9	171
<i>No. of feeds given via NG Tubes</i>	127	1.0 (0 - 3)	0 - 11	260
<i>No. of caregiver education sessions conducted on feeding via NG tubes</i>	127	1.0 (0 - 2)	0 - 11	228
<i>Wound Management</i>				
<i>No. of wound dressings and management of bed sores</i>	127	1.0 (0 - 7)	0 - 41	643
<i>No. of wound dressings and management of other chronic wounds</i>	127	1.0 (0 - 3)	0 - 20	303
<i>No. of caregiver education sessions conducted on the prevention of bed sores</i>	127	2.0 (0 - 5)	0 - 36	569
<i>IV and IM drug administration</i>				
<i>No. of cases administered of normal saline</i>	127	0.0 (0 - 2)	0 - 40	283
<i>No. of cases administered of IV Antibiotics</i>	127	0.0 (0 - 0)	0 - 9	25
<i>No. of cases administered of any other drips</i>	127	0.0 (0 - 0)	0 - 8	34
<i>No. of cases administered of IM Drugs</i>	127	0.0 (0 - 0)	0 - 12	138
<i>Death and dying care</i>				
<i>No. of Death and Dying care situations attended</i>	127	0.0 (0 - 1)	0 - 10	106
<i>No. of bereavement sessions attended</i>	127	1.0 (0 - 1)	0 - 5	107
ELDERLY CARE NURSING SERVICES				

<i>No. of home visits for geriatric care</i>	127	3.0 (0 - 7)	0 - 36	744
<i>No. of visits for Elderly Homes</i>	127	0.0 (0 - 1)	0 - 12	133
<i>No. of cases measured blood pressure</i>	127	4.0 (2 - 10)	0 - 120	1 371
<i>No. of cases measured blood sugar levels</i>	127	4.0 (1 - 13)	0 - 80	1 275
<i>No. of interventions implemented on nutrition management</i>	127	1.0 (0 - 2)	0 - 14	256
<i>No. of physical exercise programs for NCD Prevention</i>	127	1.0 (0 - 4)	0 - 10	219
<i>No. of interventions implemented on pharmacological pain management methods</i>	127	0.0 (0 - 1)	0 - 13	115
<i>No. of interventions implemented on non-pharmacological pain management methods</i>	127	0.0 (0 - 2)	0 - 13	174
<i>No. of awareness sessions on non-pharmacological pain management methods</i>	127	1.0 (0 - 3)	0 - 20	263
<i>No. of counselling sessions conducted</i>	127	2.0 (0 - 4)	0 - 29	392
EMERGENCY AND DISASTER MANAGEMENT				
<i>No. of days attended for disaster management-related services</i>	127	0.0 (0 - 0)	0 - 1	6
<i>Role played as a team leader</i>	127	0.0 (0 - 0)	0 - 2	6
<i>Role played as a collaborator</i>	127	0.0 (0 - 0)	0 - 2	7
<i>Role played as a caregiver</i>	127	0.0 (0 - 0)	0 - 0	0

Attendance of PHNs for training programmes and Contribution to Research

Attendance of PHNs for training programmes

Out of them, 92.9% (n = 118) (CI: 88.4%–97.0%) had attended at least one extra training and workshop, mainly focused on wound care, palliative care, pain management, diabetic foot care, and nutrition and dietetics, to update their knowledge during their service period as a PHN. Except for the above categories, different percentages/ proportions of PHNs had also attended several other workshops, conducted under various topics such as NCD training, exercise programs, relieving alcohol and drug use, geriatric care, caregiver education, Alzheimer's disease training, mental wellbeing, and so forth. Furthermore, the majority have participated in three training sessions, but individual attendance has varied, with a maximum of 20 training sessions during their service period.

PHNs' Contribution to Research

Only 13.4% (95% CI: 7.5%–19.9%) of PHNs were involved in research-based activities. Furthermore, the median of all assessed components related to engagement in research activities, including conducting research, publishing research, attending training and workshops, and research symposia, was 0.0 (IQR = 0–0). However, the maximum number of research workshops attended was 7.

Further details regarding attendance at training programs and engagement in research activities are tabulated in *Table 4*.

Table 4 Training participation for in-service training programmes after becoming a PHN (attended at least one workshop/research)

Variable	n	No. of PHNs	Median (IQR)	Min-Max	
ATTENDANCE FOR TRAINING AND WORKSHOPS					
Area/field of the workshop					
Wound Care	127	100 (78.7%)	1.0 (1 - 2)	0 - 8	
Palliative Care	127	102 (80.3%)	2.0 (1 - 3)	0 - 20	
Pain Management	127	76 (59.8%)	1.0 (0 - 2)	0 - 11	
Diabetic Foot Care	127	66 (52.0%)	1.0 (0 - 1)	0 - 10	
Nutrition and Dietetics	127	87 (68.5%)	1.0 (0 - 3)	0 - 12	
ENGAGEMENT IN RESEARCH ACTIVITIES BY PHNS					
					Sum
No. of research conducted	127	24 (18.9%)	0.0 (0 - 0)	0 - 2	33
No. of research papers/ abstracts published	127	10 (7.9%)	0.0 (0 - 0)	0 - 1	10
No. of research studies ongoing	127	8(6.3%)	0.0 (0 - 0)	0 - 1	8
No. of trainings or workshops attended on research	127	18 (14.2%)	0.0 (0 - 0)	0 - 7	38
No. of research symposiums or conferences attended as a delegate	127	6 (4.7%)	0.0 (0 - 0)	0 - 2	8

Figure 2 illustrates the district-wise distribution of services provided and training/workshop participation of Public Health Nurses (PHNs) in Sri Lanka. The maps highlight variations in service delivery across key areas such as NCD screening, health promotion activities, palliative care, pain management, mental health care, elderly care, and disaster management, as well as involvement in research and attendance at workshops/trainings—the values on the map range from white to dark brown, with higher values indicated by darker shades. The blue colour represents the districts where the data was not available. Here, the median values were used when mapping the data, since the PHN distribution varied from District to District. Hence, if one PHN is available and that person is more engaged in a particular activity, the District may have shown a darker colour because the Median value is equal to the total number of services provided by the particular single nurse in the District. Similarly, if that nurse is less involved in a particular service, the whole District becomes lighter since the Median value becomes lower. The blue-coloured areas on the maps represent districts with unavailable data (Data N/A), which may indicate reporting gaps rather than the absence of services.

The spatial patterns reveal considerable heterogeneity across districts. For instance, Colombo (A) and Hambantota (District I) show relatively higher levels of NCD screening, whereas the highest proportion of health promotion activities could be observed in Nuwara Eliya (F) and Vavuniya (L) districts. However, it appears that almost all nurses have participated in health promotion activities compared to other community health services. Palliative care demonstrates higher engagement in select districts, while other districts report relatively low levels of activity: most palliative care has been provided in the Polonnaruwa District (U); however, surprisingly, only a single PHN is working there. Further, pain management, mental health care, and elderly care services also display uneven geographic coverage, with concentrated activities in a few districts —pain management was high in hill country areas such as Nuwara Eliya (F) and Ratnapura (X), whereas mental health services were highest in Hambantota (I) and elderly care was clustered in the Mullaitivu District (M)—.Furthermore, Disaster management appears to be the lowest, with only the North Central Province (Polonnaruwa District) receiving this service, whereas the research involvement appeared only in the North Central Province, Western Province [Colombo-A], and the Central Province (Nuwara Eliya-F). Moreover, although overall workshop and training attendance among PHNs is at a satisfactory level, it was highest in the Western Province [— mainly in Colombo District (A)—] compared to other areas of the country.

Overall, the maps provide a visual representation of the unequal distribution of PHN services and training across the country, underscoring the need for targeted policies to strengthen uniform service provision and capacity building nationwide (*Figure 2*).

Correlation analysis between the extent of duties performed by PHNs and their socio-demographic and professional attributes

Since the Shapiro-Wilk test showed that all the variables did not behave normally except for ‘Age’, non-parametric tests were used to investigate the associations among the variables.

The Mann-Whitney U test has shown that being married among PHNs was significantly associated with the number of individuals registered under the NCD prevention program

($p=0.009$), the number of home visits for elderly care ($p = 0.018$), and the number of workshops attended ($p=0.01$). Besides, the Female gender is significantly associated with attendance to bereavement sessions ($p=0.036$) and Mental health care ($p=0.025$). Furthermore, attendance at workshops/trainings is significantly associated with attendance at bereavement sessions ($p=0.046$). However, no significant associations were found among the other variables (*Table 5*).

Tables (The table size >A4 size and to be included within the text under ‘Associated factors between socio-demographic factors and PHN services’)

Table 5 Associated factors between socio-demographic factors and PHN services

X (affected factor)	Category	n	Median (IQR)	P value
No. of home visits per week				
PHN Batch	1	41	3.0 (1 - 10)	0.729
	2	45	3.0 (1 - 10)	
	3	41	4.0 (1.5 – 10.5)	
Gender	Male	7	10.0 (1 - 14)	0.253
	Female	120	3.0 (1 – 9.5)	
Marital status	Married	122	3.0 (1 - 10)	0.180
	Unmarried	5	1.0 (1 – 6.5)	
Work in own District	Yes	119	3.0 (1 – 10)	0.85
	No	8	4.5 (2 – 7.5)	
Attended workshops/ trainings	Yes	118	3.0 (1 – 8.5)	0.374
	No	9	10.0 (1 - 14)	
Distance travelled for home visits per week				
PHN Batch	1	41	20.0 (1 - 85)	0.569
	2	45	36.0 (1 - 90)	
	3	41	40 (4 – 90)	
Gender	Male	7	180 (1 – 200)	0.138
	Female	120	35 (2 – 87)	
Marital status	Married	122	36 (2 – 90)	0.261
	Unmarried	5	5 (1 – 92.5)	
Work in own District	Yes	119	35.0 (2 – 90)	0.665
	No	8	59 (16.3 – 80)	
Attended workshops/ trainings	Yes	118	35.5 (1.5 – 90)	0.631
	No	9	35.0 (7.5 – 140)	
Distance travelled for mobile clinics per week				
PHN Batch	1	41	5.0 (0 – 17.5)	0.844
	2	45	6.0 (0 - 25)	
	3	41	6.0 (0 - 20)	
Gender	Male	7	15.0 (0 - 40)	0.738
	Female	120	5.5 (0 – 20)	
Marital status	Married	122	6.0 (0 - 20)	0.761
	Unmarried	5	5.0 (0 - 25)	
Work in own District	Yes	119	6.0 (0 - 20)	0.55
	No	8	7.0 (0 – 13.8)	
Attended workshops/ trainings	Yes	118	5.0 (0 – 20)	0.151
	No	9	10.0 (6.5 - 30)	
No. of individuals registered under NCD prevention				
PHN Batch	1	41	75.0 (32.0 - 124)	0.828
	2	45	76.0 (40 – 106)	
	3	41	62.0 (42 – 114)	
Gender	Male	7	36.0 (16 – 80)	0.111
	Female	120	75 (40 – 117)	
Marital status	Married	122	75.5 (40 – 118)	0.009*

	Unmarried	5	36.0 (10 – 40)	
Work in own District	Yes	119	71 (40 – 110)	0.15
	No	8	117.5 (52 – 189)	
Attended workshops/ trainings	Yes	118	75 (40 – 110.5)	0.257
	No	9	60 (44.5 – 214)	
<i>No. of home visits for Palliative Care</i>				
PHN Batch	1	41	9.0 (2.5 - 16)	0.55
	2	45	10.0 (4.5 - 20)	
	3	41	6.0 (3 – 15.5)	
Gender	Male	7	16.0 (4 - 48)	0.206
	Female	120	8 (4 – 16)	
Marital status	Married	122	8 (4 – 16.3)	0.067
	Unmarried	5	1 (0– 11.5)	
Work in own District	Yes	119	8 (4 – 16)	0.063
	No	8	13.5 (10 – 22.3)	
Attended workshops/ trainings	Yes	118	8 (4 – 16)	0.71
	No	9	10 (3.5 – 27)	
<i>Attending to death and dying care</i>				
PHN Batch	1	41	0.0 (0 - 1)	0.389
	2	45	1.0 (0 - 1)	
	3	41	1.0 (0 - 1)	
Gender	Male	7	1.0 (0 - 1)	0.703
	Female	120	0.0 (0 - 1)	
Marital status	Married	122	1.0 (0 - 1)	0.156
	Unmarried	5	0.0 (0 – 0.5)	
Work in own District	Yes	119	0.0 (0 - 1)	0.757
	No	8	0.5 (0 – 1.8)	
Attended workshops/ trainings	Yes	118	0.0 (0 - 1)	0.251
	No	9	1.0 (0 – 2.5)	
<i>Attending bereavement sessions</i>				
PHN Batch	1	41	0.0 (0 - 1)	0.569
	2	45	1.0 (0 - 1)	
	3	41	1.0 (0 - 2)	
Gender	Male	7	2.0 (1 - 2)	0.036*
	Female	120	0.5 (0 - 1)	
Marital status	Married	122	1.0 (0 - 1)	0.625
	Unmarried	5	0.0 (0 – 1.5)	
Work in own District	Yes	119	1.0 (0 - 1)	0.81
	No	8	0.0 (0 - 1)	
Attended workshops/ trainings	Yes	118	0.5 (0 - 1)	0.046*
	No	9	2.0 (0.5 - 2)	
<i>No. of home visits for elderly care</i>				
PHN Batch	1	41	0.0 (0 - 1)	0.426
	2	45	0.0 (0 - 1)	

	3	41	0.0 (0 - 2)	
Gender	Male	7	2.0 (0 - 2)	0.697
	Female	120	0.0 (0 - 1)	
Marital status	Married	122	0.0 (0 - 1)	0.018*
	Unmarried	5	2.0 (0 - 3.5)	
Work in own District	Yes	119	0.0 (0 - 1)	0.821
	No	8	0.0 (0 - 1.5)	
Attended workshops/ trainings	Yes	118	0.0 (0 - 1)	0.35
	No	9	1.0 (0 - 2)	
<i>No. of workshops attended</i>				
PHN Batch	1	41	8.0 (3 - 13.5)	0.670
	2	45	6.0 (3 - 12)	
	3	41	6.0 (3 - 10.5)	
Gender	Male	7	8.0 (0 - 17)	0.886
	Female	120	7.0 (3 - 11)	
Marital status	Married	122	6.0 (3 - 11)	0.01*
	Unmarried	5	17.0 (11 - 20)	
Work in own District	Yes	119	6.0 (3 - 11)	0.25
	No	8	9.5 (7.3 - 12)	
Attended workshops/ trainings	Yes	118	7.0 (3 - 12)	0.336
	No	9	10.0 (1 - 10)	
<i>Health promotion activities</i>				
PHN Batch	1	41	20 (14 - 31.5)	0.165
	2	45	28.0 (15 - 53.5)	
	3	41	25.0 (15.5 - 39.5)	
Gender	Male	7	24.0 (17 - 37)	0.937
	Female	120	24.0 (15 - 43)	
Marital status	Married	122	24.0 (15 - 43.3)	0.457
	Unmarried	5	22.0 (13.5 - 31.5)	
Work in own District	Yes	119	24.0 (15 - 39)	0.071
	No	8	52.0 (17.8 - 114)	
Attended workshops/ trainings	Yes	118	23.5 (15 - 44.3)	0.948
	No	9	32.0 (18 - 35)	
<i>Pain management services</i>				
PHN Batch	1	41	9.0 (1.5 - 19)	0.387
	2	45	13.0 (4 - 24)	
	3	41	12.0 (3 - 17)	
Gender	Male	7	15.0 (12 - 16)	0.285
	Female	120	11.0 (3 - 22.8)	
Marital status	Married	122	11.0 (3 - 22.8)	0.277
	Unmarried	5	16.0 (13 - 20)	
Work in own District	Yes	119	12.0 (3 - 23)	0.508
	No	8	12.5 (9.5 - 18.8)	
Attended workshops/ trainings	Yes	118	12.0 (3 - 23)	0.143

	No	9	4.0 (0 - 16)	
<i>Mental health care</i>				
PHN Batch	1	41	4.0 (1 - 8)	0.537
	2	45	4.0 (2 - 9)	
	3	41	5.0 (1 - 8)	
Gender	Male	7	8.0 (7 - 14)	0.025*
	Female	120	4.0 (1.3 - 8)	
Marital status	Married	122	4.0 (1.8 - 8)	0.079
	Unmarried	5	8.0 (6.5 - 11.5)	
Work in own District	Yes	119	4.0 (1 - 8)	0.129
	No	8	7.5 (4.8 - 8)	
Attended workshops/ trainings	Yes	118	5.0 (2 - 8.3)	0.107
	No	9	3.0 (0 - 5.5)	

* Association is significant at the 0.05 level (2-tailed).

Correlation analysis between the factors affecting PHN services

Spearman's correlation test revealed that the distance travelled for mobile clinics per week was significantly correlated with the Age of PHNs [$r_s=0.201$, 95% CI=0.364, -0.026), $p=0.024$] at the 0.05 level and the prior hospital experience [$r_s=-0.237$, 99% CI=-0.441, -0.010), $p=0.007$] at the 0.01 level. Along with the number of home visits for elderly homes, age has been significantly correlated [$r_s = 0.220$, (95% CI = 0.047, 0.379), $p = 0.013$] at the 0.05 level (*Table 6*).

Tables (The table size >A4 size and to be included within the text under 'Correlation analysis between the factors affecting PHN services')

Table 6 Correlation analysis between the factors affecting PHN services

Associated factors	n	Spearman's correlation coefficient (r_s)	95% CI	P value
<i>No. of home visits per week</i>				
Age	127	-0.074	[-0.245, +0.102]	0.406
Service period as a hospital nurse	127	-0.085	[-0.257, +0.088]	0.343
Work Experience as a PHN	127	-0.066	[-0.237, +0.106]	0.461
Distance from home to workplace	127	-0.141	[-0.303, +0.043]	0.114
<i>Distance travelled for home visits per week</i>				
Age	127	-0.072	[-0.244, +0.108]	0.423
Service period as a hospital nurse	127	-0.105	[-0.275, +0.071]	0.239
Work Experience as a PHN	127	-0.093	[-0.264, +0.079]	0.296
Distance from home to workplace	127	-0.146	[-0.316, +0.032]	102
<i>Distance travelled for mobile clinics per week</i>				
Age	127	-0.201*	[-0.364, -0.026]	0.024
Service period as a hospital nurse	127	-0.237**	[-0.441, -0.010]	0.007
Work Experience as a PHN	127	0.023	[-0.149, +0.193]	0.799
Distance from home to workplace	127	-0.021	[-0.192, +0.150]	0.816
<i>No. of individuals registered under NCD prevention</i>				
Age	127	0.113	[-0.057, +0.281]	0.205
Service period as a hospital nurse	127	0.122	[-0.048, +0.290]	0.173
Work Experience as a PHN	127	-0.054	[-0.224, +0.118]	0.547
Distance from home to workplace	127	-0.048	[-0.219, +0.127]	0.590
<i>No. of home visits for Palliative Care</i>				
Age	127	0	[-0.179, +0.179]	1.000
Service period as a hospital nurse	127	0.041	[-0.130, +0.210]	0.649

Work Experience as a PHN	127	0.027	[-0.144, +0.196]	0.766
Distance from home to workplace	127	-0.133	[-0.304, +0.049]	0.135
<i>Attending to death and dying care</i>				
Age	127	0.157	[-0.014, +0.318]	0.078
Service period as a hospital nurse	127	0.166	[-0.004, +0.327]	0.062
Work Experience as a PHN	127	-0.092	[-0.263, +0.082]	0.304
Distance from home to workplace	127	-0.168	[-0.338, +0.012]	0.059
<i>Attending bereavement sessions</i>				
Age	127	0.092	[-0.079, +0.263]	0.305
Service period as a hospital nurse	127	0.133	[-0.042, 0.300]	0.135
Work Experience as a PHN	127	-0.058	[-0.229, 0.117]	0.518
Distance from home to workplace	127	0.007	[-0.166, 0.179]	0.935
<i>No. of home visits for elderly care</i>				
Age	127	0.076	[-0.099, 0.246]	0.393
Service period as a hospital nurse	127	0.046	[-0.129, 0.218]	0.607
Work Experience as a PHN	127	0.016	[-0.158, 0.189]	0.861
Distance from home to workplace	127	-0.038	[-0.210, 0.137]	0.667
<i>No. of home visits for elderly homes</i>				
Age	127	0.220*	[0.047, 0.379]	0.013
<i>No. of workshops attended</i>				
Age	127	0.134	[-0.039, 0.300]	0.132
Service period as a hospital nurse	127	0.167	[-0.006, 0.330]	0.061
Work Experience as a PHN	127	0.064	[-0.111, 0.235]	0.477
Distance from home to workplace	127	-0.042	[-0.214, 0.133]	0.636

<i>Health promotion activities</i>				
Age	127	-0.022	[-0.195, 0.152]	0.806
Service period as a hospital nurse	127	-0.021	[-0.194, 0.153]	0.817
Work Experience as a PHN	127	-0.101	[-0.270, 0.074]	0.256
Distance from home to workplace	127	0.011	[-0.163, 0.184]	0.904
<i>Pain management services</i>				
Age	127	-0.033	[-0.206, 0.142]	0.709
Service period as a hospital nurse	127	-0.019	[-0.192, 0.15]	0.835
Work Experience as a PHN	127	-0.027	[-0.200, 0.147]	0.759
Distance from home to workplace	127	-0.107	[-0.276, 0.068]	0.231
<i>Mental health care</i>				
Age	127	0.008	[-0.166, 0.181]	0.927
Service period as a hospital nurse	127	0.021	[-0.153, 0.194]	0.818
Work Experience as a PHN	127	-0.058	[-0.229, 0.117]	0.515
Distance from home to workplace	127	-0.074	[-0.244, 0.101]	0.406

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Discussion

Although Public Health Nursing (PHN) services in Sri Lanka date back to 1926, with roles spanning maternal and infant care, health promotion, infectious disease prevention, and school health, the service was discontinued in the 1980s but reintroduced in 2018. This revival aimed to address emerging health challenges, specifically the growing burden of non-communicable diseases and the increasing demand for geriatric care, by redefining the role of the PHN. However, despite its re-establishment nearly seven years ago, there is still no standardised or systematic documentation of the duties and responsibilities assigned to PHNs. This gap makes it challenging to assess their efficiency, effectiveness, and overall contribution to national health objectives.

This study highlights several key findings regarding the role of Sri Lankan Public Health Nurses (PHNs). While PHNs play a significant role in non-communicable disease (NCD) prevention and home-based palliative care, their involvement in geriatric care is relatively lower. At the same time, disaster management and research remain inadequate. Since all participants were registered nurses with prior clinical experience, their transition into the PHN role has the potential to strengthen the delivery of both preventive and direct clinical services at the community level; however, notable disparities remain in their engagement with NCD-related activities. Specifically, PHNs are linked to the Primary Healthcare System Strengthening Project (PSSP) [29] exhibited a stronger focus on NCD prevention, often at the expense of other duties due to time constraints. Additionally, performance in essential nursing services such as pain management requires improvement.

In the realm of palliative care, community-based initiatives have emerged, providing structured home services that address symptom management and family support. Nevertheless, certain palliative care services, such as NG feeding and wound care, have been provided less compared to urinary catheter management. In contrast, other areas, like IV/IM drug administration, personal hygiene care, attendance in death and dying care, and bereavement sessions, remain minimal within their scope of responsibilities. However, PHNs have actively engaged in health promotion initiatives, focusing on NCD prevention and

caregiver education for activities of daily living (ADLs). Additionally, they have provided satisfactory psychological support and mental healthcare. They are also increasingly involved in geriatric health services to address the challenges posed by Sri Lanka's ageing population; however, their contributions remain relatively lower compared to palliative care and NCD prevention. Additionally, nutrition care and pain management for the elderly were insufficient, likely due to time constraints and the considerable distance of elderly homes from PHN workplaces. Therefore, there is a pressing need to strengthen policies related to elder care to enhance the ability of PHNs to deliver comprehensive services in this area [21].

Further, the findings indicate a concerning lack of engagement among PHNs in emergency preparedness and disaster response, despite these being central responsibilities in their roles. While PHNs are recognised in global emergency response frameworks, their actual involvement in disaster management is limited, revealing systemic issues in emergency preparedness within primary health care [15]. This lack of participation may be attributed to the infrequent occurrence of disasters in many service areas, resulting in minimal opportunities for involvement. However, during the COVID-19 Pandemic in Sri Lanka, they had played a significant role, mainly in specimen collection for PCR tests and health education, as emphasised by an Indonesian study [16].

Additionally, PHNs exhibit minimal engagement in research activities, which is attributed to heavy service demands, insufficient institutional support, limited research knowledge, and a lack of motivation, highlighting the need for more structured encouragement of operational research initiatives [30]. In terms of pain management, despite satisfactory overall services, deficiencies were noted in pain assessment, documentation, and the administration of prescribed analgesics, particularly morphine, likely due to issues with prescribing practices, process availability, poor knowledge, uncertainty and lack of transportation. This aligns with findings from a UK (United Kingdom) study that illustrated community nurses' uncertainties in providing home-based oral healthcare to elderly people [31]. Training and workshop participation among PHNs shows geographical disparities influenced by factors such as distance, transportation, and workshop duration, with many sessions held physically in the capital city, Colombo. The Japan Nurses Association has found that extra training programmes are essential since many PHNs lack confidence due to the restricted opportunities for gaining these abilities from pre- and post-graduate education programs[23]. Hence, the government and health authorities should enhance their understanding of PHNs' competencies and scope of practice to maximise the PHN role in PHC and public health collaboration [13].

The association between marital status and greater involvement in NCD registration, elderly home visits, and training participation suggests that personal and social stability may enhance PHNs' capacity to engage in time-intensive activities. Gender differences were also evident, with female PHNs more frequently participating in bereavement sessions and mental health care, reflecting broader caregiving expectations placed on women in health professions. The link between training and bereavement support highlights the role of structured learning in building confidence to address sensitive issues, though time constraints may limit consistent participation. Operational factors further shaped service delivery, as longer distances travelled by mobile clinics were linked to age and prior hospital experience, indicating that more senior PHNs are often deployed to roles requiring autonomy. Similarly, the association between age and home visits may reflect the accumulation of skills and community trust. Together, these findings suggest that demographic and experiential characteristics have a strong influence on the scope of PHN practice, with significant implications for workforce deployment, training, and policy planning.

Despite a clear job description for PHNs, service engagement varies across institutions, attributed to poor attitudes of administrators, limited facilities, and individual factors of PHNs. It could be created a healthcare system that is more accessible, equitable, and sustainable for the subsequent generations through expanding the role of PHNs. To improve health outcomes, reduce health disparities, and ensure access to care for vulnerable groups, PHN integration into public health initiatives has been crucial [3]. The involvement of PHNs in enhancing healthcare increases as health challenges become more diverse and complicated, and the need for PHN capacity building becomes more pressing [23]. A healthy future necessitates a cohesive nursing government, nursing professional development grounded in societal expectations, and the development of human resources in accordance with future demands[7].

Moreover, there are only 217 PHNs available in Sri Lanka, and this is for the 22.04 million (by 2023) population, while that number is 8,612 for public health midwives [32]. According to WHO recommendations, one PHN should be allocated to a population of 5,000 to achieve the accepted minimum standard for public health work in local areas [33]. Therefore, Sri Lanka needs more than 4400 PHNs. However, it is crucial that Sri Lanka needs more PHNs than recommended by WHO, based on the population needs and current health demands of the country. Thus, to calculate the exact number of PHNs based on the country's health demands, it is recommended to conduct a study using the Workload Indicators of Staffing Need (WISN)[34] method.

Limitations of the study

One of the limitations of the study was poor compliance with research engagement among PHNs, which was addressed by addressing potential barriers through various strategies, such as sending reminders and acknowledging and encouraging participants to participate in the study, thereby enhancing the response rate. Another limitation was the exclusion of two districts due to administrative issues, which can affect the generalizability of the findings. However, several efforts were made to engage PHNs from across the country, focusing on the factors that impact the scope of their duties, such as geographical conditions, weather conditions, transport facilities, economy, and available health facilities, in order to recruit a more homogeneous study population which represents the whole country. Despite this, the involvement of all PHNs in future research is recommended to better understand the factors shaping their roles.

Conclusions

In conclusion, this research illustrates the scope of duties of PHNs after the strategic repositioning of PHNs within Sri Lanka's health system. Although the number of PHNs in Sri Lanka is relatively low (N = 217) compared to the country's population, they are delivering expanded services in NCD prevention, health promotion, and home-based palliative care in community settings, despite gaps remaining in emergency preparedness and research engagement. However, there are underutilised critical areas, such as aspects of pain management, IV/IM drug administration, hygienic care, and nutrition management. Furthermore, geographical variations in the provision of community care services are evident. Furthermore, the Female gender of the PHN is significantly

associated with attendance at bereavement sessions and Mental health care. In contrast, attendance at workshops/trainings is significantly associated with attendance at bereavement sessions. Moreover, the Distance travelled by mobile clinics per week was significantly correlated with Age and prior hospital experience. In contrast, the PHN's Age was significantly correlated with the number of home visits for elderly homes.

Therefore, it is recommended to redefine policy frameworks, introduce more explicit role definitions for PHNs, recruit more PHNs, improve documentation systems, and enhance the capacity building of the PHN workforce through an improved training system focusing on essential areas, including disaster response and structured research mentorship. Furthermore, it is warranted that under-performing but essential services, such as pain management, must be embedded in the duty list of PHNs and that their related knowledge and clinical skills be enhanced to improve the PHN service while effectively and efficiently utilising PHNs. By bolstering these areas, PHNs can achieve their full potential as vital agents in improving community health and primary healthcare in Sri Lanka, while effectively contributing to the achievement of national health goals by addressing newly emerging health challenges and community healthcare service demands. Moreover, continued research on PHNs of Sri Lanka can help to improve the PHN service of the country to enhance the community health of Sri Lanka.

Abbreviations

ADLs (Activities of Daily Living),

CI- Confidence Interval

COVID-19 -Coronavirus disease 2019

GN-Grama Nialdhari

HIV/AIDS- Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome

IM-Intramuscular

IMR-Infant Mortality Rate

IQR- Interquartile range

IV- Intravenous

LMICs- Low- and Middle-Income Countries

LTR- Long Term Release

MCH- Maternal and Child Health

MMR -Maternal Mortality Ratio

NCD- Non-communicable Disease

NG- Nasogastric

NWP- North Western Province

PHC- Primary health care

PHNs- Public Health Nurses

PI- Principal Investigator

QGIS- Quantum Geographic Information System

r_s - Spearman's correlation coefficient

SD- Standard deviation

SPSS- Statistical Package for the Social Sciences

STROBE-Strengthening the Reporting of Observational Studies in Epidemiology

UK- United Kingdom

WHO- World Health Organisation

WISN- Workload Indicators of Staffing Need

Declarations

Ethics approval and consent to participate

This study was conducted with the approval of the Ethical Review Board, Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka (Approval No. ERC/2024/13 dated 28th June 2024). Research ethics standards were adhered to throughout the investigation. The participants received both verbal and written information about the study, and the freedom to withdraw from the study at any time was clearly communicated to them. All participants provided their written informed consent. The participants were completely independent of the researchers. Additionally, codes were assigned to them to protect their privacy through anonymity. Both during the study and after the findings were published, the participants will be assured of data privacy and confidentiality.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' Contributions

LS was involved in the research design, literature search, data collection, data analysis, data interpretation, and final report writing. NP was involved in the research design, guided the research process, and reviewed and edited the final manuscript with LS and JW. JW conceived the study, guided the research process, reviewed the analysed data, and reviewed and edited the final manuscript. All the authors read and approved the final manuscript.

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References

1. American Public Health Association. The definition and practice of public health nursing [Internet]. Am. Public Heal. Assoc. 2013. Available from: <https://www.apha.org/getcontentasset/be713d57-4206-4643-99be-f0a920d2ee94/7ca0dc9d-611d-46e2-9fd3-26a4c03ddcbb/nursingdefinition.pdf?language=en>. Accessed 15 Aug 2025.
2. World Health Organization (WHO). Global strategic directions for strengthening nursing and midwifery 2016–2020 [Internet]. Des. Bloss. 2016. Available from: <https://doi.org/10.1016/j.jnc.2020.125798><https://doi.org/10.1016/j.smr.2020.02.002><http://www.ncbi.nlm.nih.gov/pubmed/810049><http://doi.wiley.com/10.1002/anie.197505391><http://www.sciencedirect.com/science/article/pii/B97808> Accessed 15 Aug 2025.
3. Tushe M, Karagjozi D. The Role of Community Health Nursing in Improving Public Health : A Global and Local Perspective. Clin Case Reports Stud. 2025;9:1–3.
4. Hosseinejad A, Rassouli M, Jahani S, Elahi N, Molavynejad S. Scope of Iranian community health nurses 'services from the viewpoint of the managers and nurses: a content analysis study. BMC Nurs [Internet]. 2022;21:1–14. Available from: <https://doi.org/10.1186/s12912-022-00908-z>
5. McHugh GA, Horne M, Chalmers KI, Luker KA. Specialist community nurses: A critical analysis of their role in the management of long-term conditions. Int J Environ Res Public Health. 2009;6:2550–67.
6. World Health Organization (WHO). Global strategic directions for strengthening nursing and midwifery 2016–2020 [Internet]. 1st ed. France.: Design Blossom. Layout; 2016. Available from: <https://fctc.who.int/resources/publications/i/item/978-92-4-151604-4>. Accessed 06 Sep 2025.
7. Barasteh S, Rassouli M, Karimirad MR, Ebadi A. Future Challenges of Nursing in Health System of Iran. Front Public Heal. 2021;9:1–7.
8. Nissanholtz-Gannot R, Rosen B, Hirschfeld M, Arad L, Bloomenthal S, Goldman D, et al. The changing roles of community nurses: The case of health plan nurses in Israel. Isr J Health Policy Res. 2017;6:1–15.
9. World Health Organization (WHO). Enhancing the role of community health nursing for universal health coverage [Internet]. World Heal. Organ. 2017. Available from: <http://www.who.int/hrh/resources/health-observer18/en/>. Accessed 28 July 2025.

10. Blessing Nima Sajai XS, Sharma T, Gupta S, Guha R, Suresh Babu KC. The Evolving Role Of Community Health Nurses: A Review Of Strategies And Outcomes In Population Health Management. Dr X S Bless Nima Sajai et al AJBR Afr J Biomed Res [Internet]. 2024;27:375–81. Available from: <https://africanjournalofbiomedicalresearch.com/index.php/https://doi.org/10.53555/AJBR.v27i3S.2000>
11. Zeydani A, Atashzadeh-Shoorideh F, Hosseini M, Zohari-Anboohi S. Community-based nursing: a concept analysis with Walker and Avant's approach. BMC Med Educ [Internet]. 2023;23:1–10. Available from: <https://doi.org/10.1186/s12909-023-04749-5>
12. Serdula M, Nichols E, Aburto N, Masa'ad H. Community-Based Interventions for Stroke Provided by Nurses and Community Health Workers: A Review of the Literature. J Neurosci Nurs. 2020;52:152–9.
13. Swanson M, Wong ST, Martin-Misener R, Browne AJ. The role of registered nurses in primary care and public health collaboration: A scoping review. Nurs Open. 2020;7:1197–207.
14. NASA [National Aeronautics and Space Administration]. Natural Hazards [Internet]. 2025. Available from: <https://www.earthdata.nasa.gov/topics/human-dimensions/natural-hazards>. Accessed 15 Aug 2025.
15. Putra A, Petpichetchian W. Review Public Health Nurses' Roles and Competencies in Disaster Management. Nurse Media J Nurs. 2011;1:1–14.
16. Akbar MA, Juniarti N, Yamin A. The Roles of Community Health Nurses' in Covid-19 Management in Indonesia: A Qualitative Study. Int J Community Based Nurs Midwifery. 2022;10:96–109.
17. Wilandika A, Pandin MGR, Yusuf A. The roles of nurses in supporting health literacy: a scoping review. Front Public Heal. 2023;11.
18. American Public Health Association. Strengthening Public Health Nursing in the United States [Internet]. 2013. Available from: https://www.apha.org/policy-and-advocacy/public-health-policy-briefs/policy-database/2014/07/23/11/02/strengthening-public-health-nursing-in-the-united-states?utm_source=chatgpt.com. Accessed 17 Aug 2025.
19. Chan BC, Laws RA, Williams AM, Davies GP, Fanaian M, Harris MF. Is there scope for community health nurses to address lifestyle risk factors? The community nursing SNAP trial. BMC Nurs. 2012;11.
20. Homei A. Midwife and Public Health Nurse Tatsuyo Amari and a State-Endorsed Birth Control Campaign in 1950s Japan. Nurs Hist Rev [Internet]. 2016 [cited 2025 Jan 14];24:41–64. Available from: <https://pubmed.ncbi.nlm.nih.gov/26297588/>
21. Sudo K, Noda S, Kobayashi J, Wongwacharapaiboon P, Sakolwasan U, Takahashi K. The role of community nurse in the implementation of health policy for the elderly in Thailand. Glob Heal Med. 2023;5:345–53.
22. Huy N Van, Bang KS, Xuan HTA, Thang CD, Thanh N Van, Hoan LT, et al. The roles of, activities of, and competencies for, community nursing services in rural Vietnam: Implications for policy decisions. Int J Health Plann Manage. 2018;33:e1147–59.
23. Fujioka M, Okamoto R, Miyamoto K, Koide K, Kageyama M, Saeki K, et al. Best practice transfer by public health nurses in Japan: actual conditions and related factors. BMC Nurs. 2024;23:1–13.
24. Kemppainen V, Tossavainen K, Turunen H. Nurses' roles in health promotion practice: An integrative review. Health Promot Int. 2013;28:490–501.
25. Medical Statistics Unit, Ministry of Health. Annual Health Bulletin Ministry of Health 2020 Sri Lanka [Internet]. 2020. Available from: www.health.gov.lk. Accessed 17 Aug 2025.
26. Ceylon. Administration Report of The Director of Health Services 1926. Colombo: Ceylon Government Press; 1926.
27. Senadheera L, Priyanthi N, Warnasekara J. Revisiting the History: A Century of Public Health Nursing in Sri Lanka: A Scoping Review [Internet]. 2025. Available from: <https://www.researchsquare.com/article/rs-6339752/v1>
28. Centre C, Vandenbroucke JP. Strengthening the reporting of observational studies in epidemiology (STROBE) statement : guidelines for reporting observational studies. BMJ. 2007;335:20–2.
29. Thekkur P, Fernando M, Nair D, Kumar AMV, Satyanarayana S, Chandraratne N, et al. Primary Health Care System Strengthening Project in Sri Lanka: Status and Challenges with Human Resources, Information Systems, Drugs and Laboratory Services. Healthc. 2022;10.
30. Brodaty H, Gibson LHR, Waine ML, Lilian R, Constance DM. Research in general practice: a survey of incentives and disincentives for research participation Allan M Shell MBBS Grad Dip PH Academic General Practitioner and Honorary Research Fellow. Ment Health Fam Med. 2013;10:163–73.
31. Mitchell G, Stark P, Wilson CB, Tsakos G, Brocklehurst P, Lappin C, et al. 'Whose role is it anyway?' Experiences of community nurses in the delivery and support of oral health care for older people living at home: a grounded theory study. BMC Nurs [Internet]. 2023;22:1–13. Available from: <https://doi.org/10.1186/s12912-023-01533-0>
32. De Silva D. An update on the human resources of Ministry of Health, Nutrition & Indigenous Medicine, Sri Lanka. J Coll Community Physicians Sri Lanka. 2019;24:170.
33. Olson Keller L, Litt EA. Report on a Public Health Nurse to Population Ratio Background [Internet]. 2008. Available from: <https://www.cphno.org/wp-content/uploads/2020/08/ASTHOReportPublicHealthNursetoPopRatio2008.pdf>
34. World Health Organization (WHO). Workload Indicators of staffing need (WISN) [Internet]. 2023. Available from: [https://www.who.int/tools/wisn#:~:text=staffing need \(WISN\),Workload Indicators of staffing need \(WISN\),and high-quality health services](https://www.who.int/tools/wisn#:~:text=staffing need (WISN),Workload Indicators of staffing need (WISN),and high-quality health services). Accessed 04 Oct 2025.

Figures

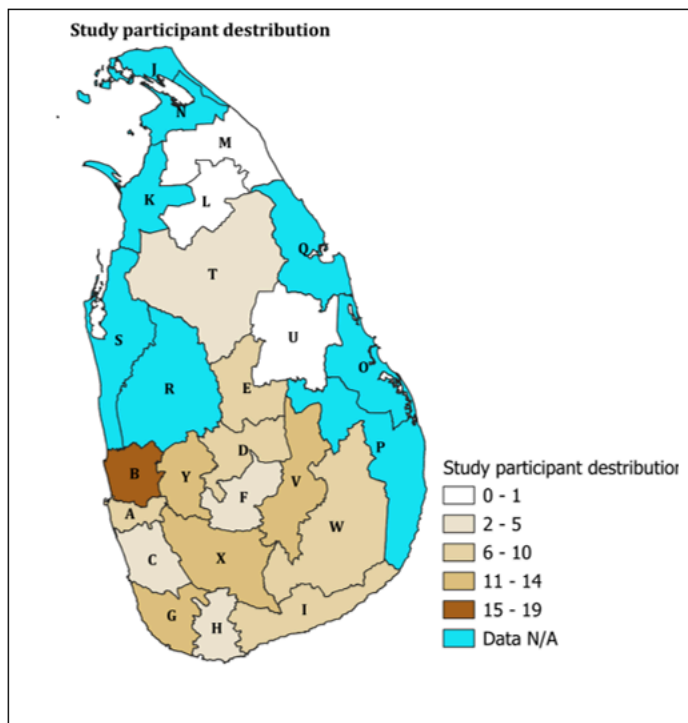


Figure 1

Study participant distribution

The code numbers for each District are as below: A-Colombo, B-Gampaha, C-Kalutara, D-Kandy, E-Matale, F-Nuwara Eliya, G-Galle, H-Matara, I-Hambantota, J-Jaffna, K-Mannar, L-Vavuniya, M-Mullaitivu, N-Kilinochchi, O-Batticaloa, P-Ampara, Q-Trincomalee, R-Kurunegala, S-Puttalam, T-Anuradhapura, U-Polonnaruwa, V-Badulla, W-Monaragala, X-Ratnapura, Y-Kegalle.

Data N/A: Data were not available as no PHNs were appointed/ available in these districts (District J, K, N, O, P, & Q) during the data collection, while the other 2 Districts (District R & S) had to be excluded due to the obtaining of the administrative approval for data collection being considerably delayed.

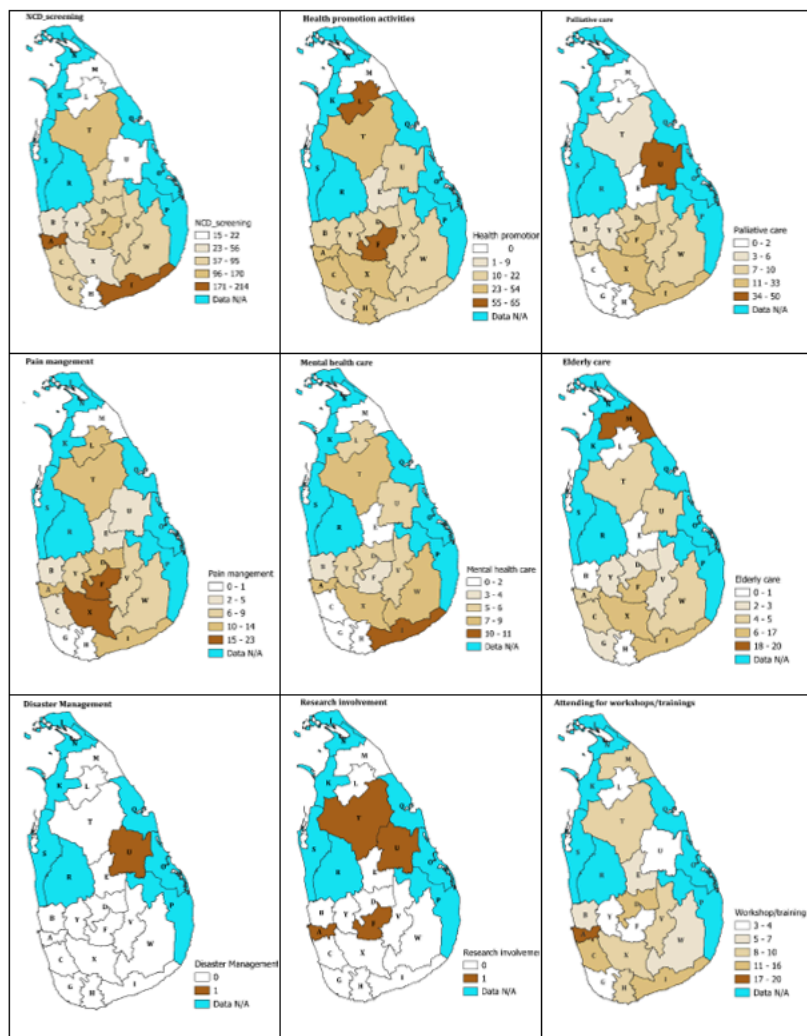


Figure 2

Distribution of Services and training/workshops of PHNs in Sri Lanka

Data N/A: Data were not available. The code numbers for each District are as below: A-Colombo, B-Gampaha, C-Kalutara, D-Kandy, E-Matale, F-Nuwara Eliya, G-Galle, H-Matara, I-Hambantota, J-Jaffna, K-Mannar, L-Vavuniya, M-Mullaitivu, N-Kilinochchi, O-Batticaloa, P-Ampara, Q-Trincomalee, R-Kurunegala, S-Puttalam, T-Anuradhapura, U-Polonnaruwa, V-Badulla, W-Monaragala, X-Ratnapura, Y-Kegalle.