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Perception, perceived scope, and potential barriers towards developing nurse practitioners cadre among health care providers and beneficiaries: A pilot study from Northern India

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Abstract:

BACKGROUND: The role of nurse practitioner (NP) emerged in early 1965 when general practitioners began working with nurses. Evidence across the world highlights the benefits achieved by the NP role. The Indian Nursing Council (INC) implemented a country-wide NP in critical care (NPCC) program with the approval of the ministry of health and family welfare (MoHFW) in 2017. The NP role is in its infancy in India. Hence, there is a need to assess the perception among beneficiaries and healthcare personnel. This study was conducted to assess the perception, perceived scope, and potential barriers for developing the role of NPs in India among beneficiaries and healthcare providers.

MATERIAL AND METHODS: A descriptive, cross-sectional pilot study was conducted at AIIMS Rishikesh, Uttarakhand, India, among 205 participants (84 beneficiaries, 78 nurses, and 43 physicians) using a proportionate stratified random sampling technique. Likert scales and socio-demographic sheets were used to assess the perception, perceived scope of practice, and potential barriers in developing a NP cadre in India. Descriptive and inferential statistics were used for analyzing data.

RESULTS: The mean age of beneficiaries was 37.98, nurses was 27.58, and physicians was 28.13 years, respectively. 121 (61%) of participants were highly favored, and 77 (38%) were in favor of developing NP cadre in India. They considered it to be necessary, feasible, and acceptable in India. The feasibility and necessity of the perception domain were highly significant ($P < 0.001$ and $P < 0.003$, respectively). Nurses (mean \pm SD: 35.36 \pm 3.55) considered that NPs could have a wide range of practice followed by beneficiaries (mean \pm SD: 38.17 \pm 3.68) than physicians (mean \pm SD: 34.75 \pm 5.95). Lack of awareness, the nonexistence of cadre structure, lack of acceptance of the role of physicians, and lack of clear policy were the key potential barriers to develop an NP cadre in India.

CONCLUSIONS: In this study, participants had favorable views on employing NPs in India; thus, this role will improve healthcare access for beneficiaries. NPs can carry out a wide range of practices. However, a lack of awareness, no cadre structure, and a lack of a clear policy may hinder the development of the NP cadre in India.

Keywords:

Barriers, beneficiaries, health care providers, Nurse practitioner cadre, perception, scope

Introduction

The role of nurse practitioners (NPs) became apparent in the early the 1960s when general practitioners began

collaborating with nurses. The rise of medical specialization has pushed many physicians out of primary care, especially in rural and underserved areas.^[1] Loretta Ford partnered with physician Henry Silver to create the first NP training program at

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the University of Colorado in 1965.^[2,3] "NP" is a generic term with various titles, including advanced nurse practitioner (ANP), clinical nurse specialist (CNS), specialty nurse, and advanced clinical practitioner.^[4]

NPs are now growing in scope around the world. The International Council of Nurses (ICN) reports that almost 70 countries worldwide have successfully implemented NP roles, including Asian countries such as South Korea, Singapore, and Thailand.^[4-6] The ICN reports that the number of NPs has doubled in the last 10 years and beneficiaries are confident in the health care provided by NPs, as evidenced by the more than 1.06 billion people who visit NPs annually. The number of primary care NPs is projected to increase by 84% between 2010 and 2025; if this trend continues in 2030, the proportion will bounce from 19% to 29% and continue to rise.^[5,7] Surprisingly, the growth of NPs is 3 to 9 times higher compared to doctors in the western world, which signifies that their role is well accepted in the health care delivery system of these countries.^[8] Studies have found that NPs manage about 67% to 93% of primary curative care services in the western world. To our surprise, it was much more cost-effective than care provided by physicians: 29% in primary care and 11%–18% in in-patient services.^[7,9,10]

Evidence across the world conveys that the NPs can deliver a wide range of health care services, including the assessment, diagnosis, and management of acute-to-complex health problems, ordering tests, interpreting results, prescribing physical therapy, making referrals, performing minor procedures, such as stitching wounds, casting, and skin biopsies, health promotion, disease prevention, health education, and counseling to individuals, families, groups, and communities.^[10-13] They can also serve as healthcare researchers, interdisciplinary consultants, patient advocates, and administrators.^[13] A licensed and independent NP can practice in nearly every healthcare setting, including clinics, hospitals, emergency rooms, private physician or NP practices (both managed and owned by NPs), nursing homes, schools, colleges, retail clinics, public health departments, nurse-managed clinics, homeless clinics, and home health. NPs practice independently and in coordination with other healthcare professionals.^[12-14] However, the scope of practice varies from country to country and is regulated by the state nursing board.^[8]

Evidence highlights the benefits of advancing nursing as an NP. Cochrane reviews and meta-analyses have substantiated that NPs can deal with beneficiaries, the substitution of physicians by nurses in primary care settings enhances quality care that leads to better health outcomes and higher patient satisfaction with the support provided to patients and families, and time made available to patients.^[6,13,15,16]

In this view, the Indian Nursing Council (INC) implemented a country-wide NP in critical care (NPCC) residency program with the approval of the MoHFW in 2017 to expand the role of registered nurses.^[17,18] The number of institutes that offered NPCC courses in the country declined over the years due to the lack of a specified role for NPs, no provision of registration in nursing councils as NPs, lack of legal protection for NP title, and limited scope of employment/practice; conversely, recently graduated NP in critical care are working as routine clinical nurses.^[19]

In 2002, the government of West Bengal was the first state in India to start a NP in midwifery course (NPM) under the India-AusAID project, providing 18-month training to diploma and graduate nurses who were yet unable to obtain due recognition.^[20] On the track, the Gujarat government started in 2009 and sanctioned 25 positions of independent midwifery practitioners (IMP) but still awaiting to appoint.^[21] The policy process was delayed for several reasons, notably less drive and shared vision, unconfined about developing an autonomous cadre of midwives, and there was less space for open dialogue. Similar were steps taken by the state governments of Telangana, Kerala, West Bengal, and other states to train registered nurses in NPM.^[22] However, it was unsuccessful in attracting applicants due to the lack of clarity about the registration process with the nursing council, the scope of practice, and employment.

Nursing is considered inferior in many developing countries and receives little recognition and no authority or power.^[4,21,22] Globally, NPs encountered several barriers to implementation and practice related to policy, certification, licensing, and perception. This had negative implications for the entire practice.^[22,23] Numerous systematic reviews confirm the complexity of implementation from a multilevel perspective requiring consideration of individual, organizational, practical, and systemic factors.^[24,25]

Most developing countries have serious health workforce problems, especially about concerning physician availability. In India, the doctor-to-population ratio is 1:1456 compared to the WHO 1:1000 recommendation, which is mostly concentrated in urban areas, limiting access to health care in rural areas.^[26] However, the increasing demand for healthcare services at the grassroots level is a source of concern and burden for healthcare delivery systems, leading to comprehensive health services.^[19] Consequently, shifting tasks is necessary to reorganize and decentralize the healthcare delivery system. Nurses and midwives are the primary pillars of the healthcare delivery system and play an essential role in the delivery of prevention, promotion, and rehabilitation services.^[21,22] The MoHFW emphasized

that nurses occupy an essential position in the healthcare delivery system, and their role can be considered equal to that of doctors in achieving the sustainable developmental goals (SDGs).^[27,28]

The Indian government has also offered to expand the role of nurses through nurse-led models of health care delivery. Few institutions in India have embraced this nurse-led clinic model, and some have expanded their roles, such as ostomy nurses, stroke nurses, public health nurses, and diabetes educator nurses. But they are trained internally, and no law protects their titles.^[23] Therefore, the successful execution of any new cadre in a multi-disciplinary system is a complex and most stock-taking exercise in India. Therefore, it is essential to evaluate the perception, scope, and barriers among beneficiaries and health personnel concerning the development of NPs roles in India.

Material and Methods

Study design and setting

This cross-sectional pilot study was carried out among physicians, nurses, and beneficiaries from Nov 30 to Dec 8, 2020, at All India Institute of Medical Sciences Rishikesh, Uttarakhand, India.

Study participants and Sampling

A proportionate stratified sampling technique was used to select the beneficiaries, Nurses, and physicians who are willing to participate in the study. Physicians, nurses who are practicing for a minimum of 1 year in the in-patient department (IPD), and beneficiaries who are age >19 years, can converse in Hindi or English and be admitted for treatment for a minimum of 3 days were included. Beneficiaries diagnosed with mental illness and sensory deficits and doctors working in non-clinical departments were excluded. After explaining the objectives, we obtained written consent. The researchers administered the questionnaire, and data were collected. The process to collect the data took ~15 min for each participant.

Data collection tool and technique

The study comprised four sections; the first section contains items on socio-demographic variables such as age, gender, education level, designation, etc. The second section includes a 5-point likert scale with 15 items related to the perception of NP development in India, ranging from strongly agree to strongly disagree. There were both positives and negatives, and they were scored accordingly. The respondent perception was categorized as highly favorable (>56), favorable (55-37), and unfavorable (<37).

Section three comprised 15 items on a 3-point likert scale regarding the scope of practice for NPs in India. Section

four comprises 10 items regarding potential barriers to developing an NP cadre in India. Nine experts validated the tool (2 clinicians, two nursing faculty, 3 clinical nurses, and 2 general public) to assess the readability, clarity, relevance, and acceptability. Modifications were made for a better understanding before the final survey.

The data received was coded and entered in amicro soft excel spreadsheet and analyzed using statistical package for the social sciences for windows version 23. Descriptive statistics (frequency, mean, and standard deviation) and inferential statistics (Kruskal-Wallis test) were used in the study to calculate to estimate the study results.

Ethical considerations

Written permission was taken from the Institutional Ethics Committee (39/IEC/Ph.D./2018). Participation in this survey was voluntary, with no remuneration. Written informed consent was obtained from the participants before commencing their questionnaire. Participants were allowed to decline or withdraw their consent at any survey stage and were promised anonymity and confidentiality.

Results

Participants characteristics

A pilot study was conducted to assess perceptions, scope, and potential barriers regarding developing a NP cadre in India among beneficiaries, nurses, and physicians. A total of 205 participated and the mean age of the beneficiaries was 37 ± 1.17 , nurses 27 ± 3.78 , and physicians 28.13 ± 7.34 years. Among the beneficiaries, 55% were males, and 46% were females. Among nurses, 59% were males, 41% were females, 63% were male physicians, and 37% were female physicians. Over 50% of respondents were from rural areas, and almost 79% of participants were Hindus. 32% of the beneficiaries were educated up to the primary level, and 43% were farmers earning up to 20,000 rupees a month. Of those nurses, 60% graduated, and 90% were nursing officers. Among the physician, more than 50% above graduated and were assistant professors. The majority of nurses and doctors had between 1 and 5 years of experience in their field. 88% of doctors had no experience working with NPs, and 73% of nurses were interested in becoming NPs. Surprisingly 94% of the beneficiaries are unaware of the NP cadre. However, 95% of nurses and 40% of physicians were aware of the NPs role [Table 1].

Perception towards developing nurse practitioner cadre

41 (48%) beneficiaries, 75 (96%) nurses, and 9 (21%) physicians had highly favorable perceptions, and 43 (51%) beneficiaries, 03 (4%) nurses, and 31 (72%) physicians had the favorable perception. Interestingly,

Table 1: Socio-demographic characteristics of participants

Variables	n=205		
	Beneficiaries (n=84) f (%)	Nurses (n=78) f (%)	Physician (n=43) f (%)
Age (in years)			
20-30	19 (23)	64 (82)	12 (28)
30-40	21 (25)	12 (15)	19 (44)
41-50	24 (25)	02 (03)	11 (26)
51-60	11 (14)	-	01 (02)
>60	09 (11)	-	-
Mean±SD	37.98±1.17	27.58±3.78	28.13±7.34
Gender			
Male	45 (54)	46 (59)	27 (63)
Female	39 (46)	32 (41)	16 (37)
Habitat			
Rural	44 (52)	*	*
Urban	40 (48)	*	*
Religion			
Hindu	66 (79)	*	*
Muslim	06 (07)	*	*
Christian	08 (10)	*	*
Sikh	04 (05)	*	*
Educator status			
No formal Education	13 (15)	*	*
Primary Education	27 (32)	*	*
Secondary Education	21 (25)	*	*
Higher Sec Education	16 (19)	*	*
Diploma	*	29 (37)	-
Graduate	07 (08)	47 (60)	18 (42)
Post-graduate	*	02 (03)	13 (30)
Ph.D.	*	-	09 (21)
Post-Doctoral	*	-	03 (07)
Designation			
Nursing Officer	-	70 (90)	-
Senior Nursing Officer	-	08 (10)	-
Residents	*	*	11 (25)
Assistant Professor	*	*	06 (14)
Associate Professor	*	*	12 (28)
Additional Professor	*	*	12 (28)
Professor	*	*	02 (05)
Occupational status			
Unemployed/Homemaker	9 (11)	*	*
Laborer/Farmer	36 (43)	*	*
Self-employed/Business	24 (29)	*	*
Private sector	13 (15)	*	*
Government sector	02 (02)	*	*
Years of experience			
1-5	*	71 (91)	13 (30)
6-10	*	07 (08)	16 (37)
11-15	*	01 (01)	10 (23)
>15	*	-	04 (09)
Exp working with the Nurse Practitioner			
Yes	-	-	05 (12)
No	-	-	38 (88)
Want to become an NP			
Yes	*	57 (73)	*
No	*	21 (27)	*
An idea about Nurse Practitioners (NP)			
Yes	05 (06)	74 (95)	17 (40)
No	79 (94)	04 (05)	26 (60)

*NA: Not applicable, -: No participants were there in that category

none of the participants had negative perceptions about the roles of NPs, except 03 (7%) physicians about the development of NPs in India. It is important to note that the mean perception scores were higher among nurses (48.04 ± 4.21), followed by beneficiaries (40.97 ± 4.71) and physicians (39.51 ± 5.93) [Table 2].

Perception of necessity and feasibility domains was highly significant ($p \leq 0.001$, $P \leq 0.003$) among the study participants. It shows that beneficiaries, nurses, and physicians shared similar views about the need and feasibility of developing an NP role. However, the acceptability domain items were not significant ($p = 0.421$) [Table 3].

Perceived scope of practice for the NPs

Nurses (mean ± SD: 35.20 ± 3.55) viewed that NPs can have a wide range of practice followed by beneficiaries (mean ± SD: 38.17 ± 3.68) than physicians (mean ± SD: 34.75 ± 5.95). It was important to note that beneficiaries and physicians were confident that NPs could perform most health tasks independently [Table 4].

More than 90% of participants agreed that NPs can independently assess beneficiaries, order diagnostic tests, encompass health promotion and disease prevention activities, and educate beneficiaries. In addition, 76%

of nurses, 64% of physicians, and 47% of beneficiaries believed that NPs can diagnose patients’ problems. 76% of nurses, 56% of physicians, and 45% of beneficiaries viewed NPs can prescribe drugs. Almost 50% of participants agreed that NPs can operate independently of administrative and managerial activities [Figure 1].

Possible barriers to developing the NP role in India among beneficiaries, nurses, and physicians

Nurses have the highest mean (mean ± SD: 23.87 ± 2.52), followed by physicians (mean ± SD: 21.46 ± 2.17) and beneficiaries (mean ± SD: 21.46 ± 2.18), indicating that nurses agreed with most of the barriers as compared to the physicians and patient’s for development of the NP role in India [Table 5].

The majority of the beneficiaries (98%), nurses (87%) physicians (89%) felt that there is a lack of awareness about the NP role, followed by 81% of beneficiaries, 100% of nurses, and 84% of physicians believed that lack of cadre structure/job would be the barrier to implementing the role. 86% of beneficiaries, 88% of nurses, and 85% of physicians think that a lack of role acceptance could be a barrier. Moreover, over 60% of them considered unclear policies, lack of supervision and leadership, and inadequate training as obstacles to cadre development [Figure 2].

Table 2: Perception of beneficiaries, nurses, and physicians in developing NP cadre in India

Participants	Level of Perception			Mean±SD
	Highly favorable (>56) [#]	Favorable (55-37) [#]	Unfavorable (<37) [#]	
	f (%)	f (%)	f (%)	
Beneficiaries (n=84)	41 (49)	43 (51)	-	40.97±4.71
Nurses (n=78)	75 (96)	03 (04)	-	48.04±4.21
Physicians (n=43)	09 (21)	01 (72)	03 (01)	39.51±5.93
Total	25 (61)	77 (38)	03 (01)	

[#]1-75 Range of score

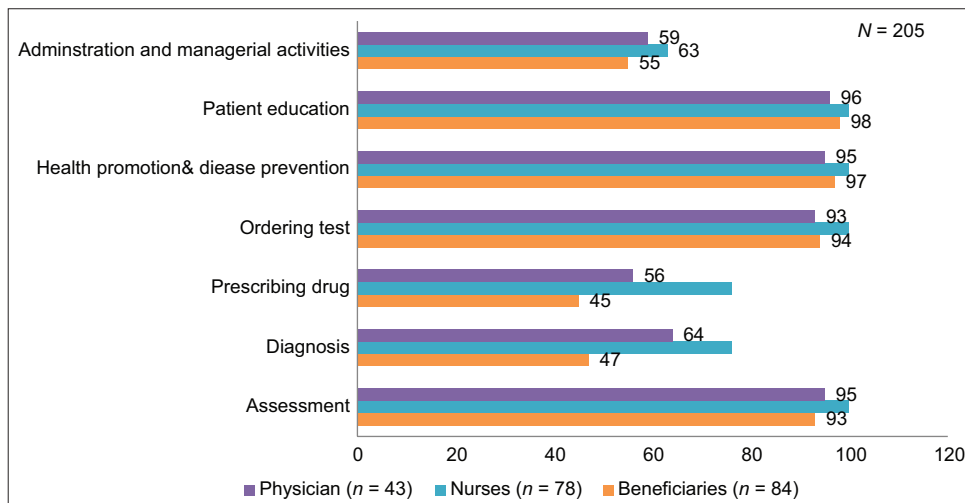


Figure 1: Overall opinion Scope of practice for NPs (Multiple responses)

Table 3: Domains Perception of beneficiaries, nurses, and doctors on the development of NPs cadre in India

Domains	n=205				
	Participants	Mean±SD	SEM	t	P
Essentiality	Beneficiaries	18.78±2.57	0.28	19.37	0.001***
	Nurses	20.92±5.23	0.59		
	Physicians	17.41±2.86	0.43		
Feasibility	Beneficiaries	16.55±3.03	0.33	13.65	0.003**
	Nurses	18.69±2.17	0.24		
	Physicians	16.67±2.89	0.44		
Acceptability	Beneficiaries	17.48±2.33	0.25	11.22	0.421
	Nurses	22.48±1.77	0.20		
	Physicians	15.55±3.01	0.45		

\$Kruskal Wallis test, Range of the scores (5-25), beneficiaries (n=84) Nurses (n=78) Physicians (n=43), ***($P < 0.001$), **($P < 0.005$)

Table 4: Scores of perceived scope of practice for NPs by beneficiaries, nurses, and physicians

Participants	n=205	
	Mean±SD	Range
Beneficiaries (n=84)	35.36±3.55	27-37
Nurses (n=78)	38.17±3.68	29-41
Physicians (n=43)	34.75±5.95	28-36

Range of score: (15-45)

Table 5: Scores of potential barriers to the development of NP cadre among beneficiaries, Nurses, and Physicians

Participants	n=205	
	Mean±SD	Range
Beneficiaries (n=84)	20.54±2.18	13-27
Nurses (n=78)	23.87±2.52	18-30
Physicians (n=43)	21.46±2.17	17-28

Range of score: 10-30

Discussion

The role of NPs is relatively prosperous and growing rapidly at the global level. The role of NP is still in its infancy in India.^[10] Perspectives from beneficiaries, nurses, and physicians are essential in reporting to health authorities on current needs and strategic directions for role development. The mean age of the beneficiaries in this present study was 37.98 ± 1.17 years, nurses 27.58 ± 3.78 , and physicians 28.00 ± 7.34 . 32% of beneficiaries were educated up to the primary level, 60% of nurses graduated, and 50% of physicians were post-graduated. The majority of nurses and physicians had 5 years of clinical experience, and 73% of nurses wanted to be NPs. 93% of recipients were unfamiliar with the roles of NPs. These characteristics are the same as those of Gulería S, Sheoran P, and Siddiqui A (2017),^[28] Mathew D, Goyal H (2016),^[29] and Chandni, Bharadwaj UD (2020).^[30]

The findings of this pilot study show that nurses, beneficiaries, and physicians favor creating a NP cadre in

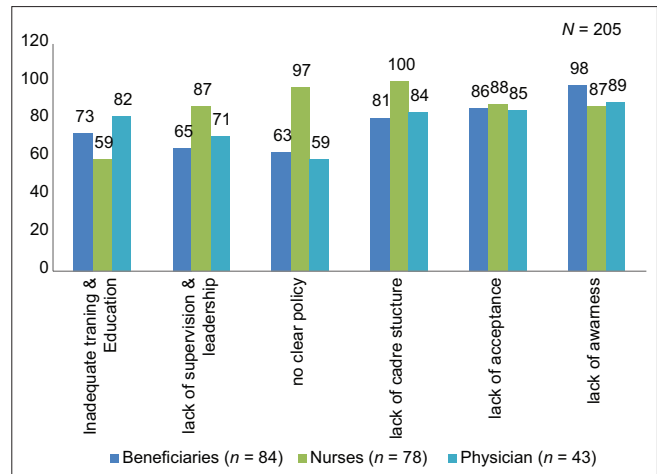


Figure 2: Overall opinions on barriers to the development of NP cadre (#Multiple responses)

India. This finding was almost similar to the conclusion of the study by Gulería S, Sheoran P, and Siddiqui A (2017)^[28] and Mathew D, Goyal H (2016),^[29] which reported that physicians, nurses, and public hopeful about bringing the NP role in India. The current study indicates that developing the NP role is highly needed, achievable, and acceptable. However, physicians have a slightly lower perception of acceptability. This finding is consistent with work carried out in Kerala, India, by Mathew D, and Goyal H (2016).^[29] It shows that only 80% of the public, 100% of nurses, and only 50% of physicians support developing a NP's cadre in India. However, there are shreds of evidence internationally, including Jakimowicz *et al.* (2017),^[24] Kraus and DuBois (2017),^[31] Schadewaldt *et al.* (2016),^[16] Weiland (2015)^[10] which support for NP role.

The present study highlighted that NPs can perform most health tasks independently, such as assessment tasks, i.e., taking history, physical examination, ordering tests, and interpreting the results. It also emphasized that NPs can These findings complement the research carried out by Mathew D, Goyal H (2016),^[29] Carrier and Adams (2017),^[32] Poghosyan *et al.* (2017),^[33] Maier and Aiken (2016)^[3] Sangster-Gormley *et al.* (2015).^[34] More than 90% of participants believe that NPs can promote health and prevent illness, including educating patients. Almost 50% of participants felt NPs can independently engage in administrative and management activities. Hansen *et al.* (2021)^[25] Smith T, *et al.*, (2019)^[35] have adopted a marginal parallel view of participants' scope of practice that is consistent with the research. However, physicians disagreed with certain tasks, such as prescribing drugs. But this observation is partly contradicted by western studies authored by Xue *et al.* (2016),^[6] Maier and Aiken (2016),^[3] which support prescribing rights for NPs.

Participants in the study addressed potential obstacles from their perspective for developing the NP cadre in India. Most of the barriers were expressed by nurses as compared to physicians and beneficiaries. Perhaps nurses are mindful of current scenarios, policies, and the existing legal framework for nurses in the country. Knowledge-based barriers may impede participants perspectives, as evidenced by the results that almost 90% of the respondents believed the lack of awareness about NP role among the public and other healthcare professionals is a major hindrance to implementing the role in our country. Furthermore, this study found that the lack of acceptance of the NP role by physicians and other health professionals may prevent the creation of an NP role. This is reinforced through studies done at the national and international level by Gulería S, Sheoran P, and Siddiqui A (2017),^[28] Jakimowicz *et al.* (2017),^[24] Mathew D, Goyal H (2016),^[29] which confirms physicians and beneficiaries are unaware the NP role and participants who are aware will more likely be favor the creation of an NP cadre than those who are unaware. Therefore, every effort should be made to educate Indian citizens, including health care providers, about the role and responsibilities of NPs.

More than 80% of participants agreed that Lack of cadre structure/job and unclear policy, inadequate training, Lack of supervision, and leadership can be the barriers to implementing the role. Although there is no direct evidence in the Indian context, the results of this study appear to be in partial agreement with G. Justin (2022),^[36] Kraus E, DuBois JM (2017),^[31] which investigate the barriers for the implementation of ANP role.

Limitations and recommendations

This study was confined to the single-center pilot study, and hospital and nursing administrators were not involved. Hence, stakeholder perceptions may not reflect. Researchers found it difficult to gather data because the NP is a new concept, and participants were unaware of it. As a result, few were reluctant to fill out the questionnaire, and a structured self-reporting of participants can limit their perception.

Conclusions

The study concludes that implementing NP cadre is necessary, feasible, and acceptable. The NPs can perform most health tasks independently, such as taking history, physical examination, ordering tests, interpreting the results, educating the beneficiaries, and administration and managerial activities. Lack of awareness of NP role, less acceptance of the NP role by physicians and other health professionals, Lack of cadre structure/job and unclear policy, Lack of supervision and leadership, and Lack of a well-defined role for NPs might be major

hindrances in implementing the role in our country. Therefore, every effort must be taken to create awareness of the NP role, cadre structure licensers, and a robust legal framework by the stockholder to overcome these hurdles to embed this into our health care system. It is restricted to generalization since it is a pilot study centered on a single center. This pilot study recommends wide coverage of participants in different states and districts of the nation for broad generalization.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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