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The Role of Advanced Practice Nurses in Primary Healthcare: Improving Access and Outcomes

Mishari Faraj Mohammed Alotaibi[1], Alhanouf Khurboush Muaddi Alotaibi[2], Anwar Burayt Matni Alanazi[3], Majeeda Saad Alqurashi[4], Aisha Mohammed Al-Thobaiti[5]

[1,2]Nursing Technician, Prince Sultan Military Medical City, Riyadh KSA
[3]Nursing specialist, Prince Sultan Military Medical City, Riyadh KSA
[4,5]Technician nursing, Prince Sultan Military Medical City, Riyadh KSA

ABSTRACT

The importance of advanced practice nurses (APNs) cannot be overstated when it comes to the implementation of fundamental healthcare delivery, particularly in connection to issues concerning accessibility and outcomes. An in-depth analysis of the contributions that advanced practice nurses (APNs) make to primary care settings is the primary focus of this study. The primary focus is on the benefits that APNs have on improving clinical outcomes and patient access to treatment. Through the combination of modern literature and empirical data, the research highlights the various ways in which advanced practice nurses (APNs), which include nurse practitioners, clinical nurse specialists, midwives, and anesthetists, contribute to the improvement of healthcare delivery. Some of the characteristics of advanced practice nurses' (APNs) responsibilities that are investigated in this study include the ability to manage chronic illnesses, the quality of care that is provided, and the ability to execute challenging clinical tasks. The purpose of this study is to investigate the ways in which advanced practice nurses (APNs) enhance access to healthcare by reducing patient wait times, expanding the availability of services, and bridging the gap in poor locations. The research also investigates the ways in which advanced practice nurses (APNs) influence clinical outcomes, such as patient satisfaction, disease management, and overall health gains. The findings demonstrate that APNs deliver treatment that is comparable to or even superior to that which is provided by physicians. Important findings indicate that advanced practice nurses (APNs) improve patient outcomes by delivering therapy that is more comprehensive and tailored. Additionally, they boost access to care in general, particularly in places that are economically disadvantaged and rural. This study demonstrates the significance of advanced practice nurses (APNs) in the management of both short-term and long-term health conditions. It also highlights the contribution that APNs make to the development of healthcare quality while simultaneously reducing the costs of healthcare.

Keywords: Advanced Practice Nurses, healthcare, diagnosis, treatment

INTRODUCTION

With the prevalence of chronic diseases on the rise, there is an urgent need to address the health care needs of people through the deployment of new and reformative approaches. This is a necessity that cannot be ignored. Some of these problems are caused by the workforce in the health care industry, which includes a shortage of qualified personnel and an uneven distribution of those workers around the country. Additionally, there is a dearth of education that is favorable to the provision of high-quality medical treatment. APN, which stands for advanced practice nursing, is now being investigated as one of these advancements.

With its roots extending back more than four decades in the United States and Canada, APN experienced tremendous expansion in the United Kingdom throughout that period of time. Nigeria, Ireland, Germany, Australia, and New Zealand are just some of the countries that have recently begun implementing it. Other countries that have done so include New Zealand. In the majority of countries, the reforms were ultimately implemented through the implementation of significant modifications to legislation and professional regulation. As a result of these modifications, professional practice environments and nursing training spaces were completely modified.

Advanced practice nursing (APN), which is more popular in developed nations with high incomes, improves both coverage and access to health services through its implementation. In countries with low and intermediate incomes, there is a well-established interest in and a significant need for the implementation of APN measures. Greater than seventy nations are eager to discuss the possibility of adopting APN into their own healthcare systems. It is specifically anticipated that it will assist with capacity building, attracting, and retaining nurses in health services, all of which lead to a better health workforce. In addition, it is believed that it will help with retaining nurses. Increasing health coverage, lowering the cost of healthcare, and enhancing the quality of care are the objectives of the Advanced Practice Nurse (APN) program. It has been demonstrated through study that advanced practice nurses are capable of producing

outcomes that are comparable to, or even superior to, those of physicians who provide the same method of therapy. Based on the data that is currently available, it can be concluded that patients are relatively content with the care that they receive from these nurses.

The Advanced Practice Nurse (APN) can be considered an innovative tool due to the fact that it helps enhance health care for vulnerable populations. These populations include people who are indigenous to the area, individuals who live in areas that are either dangerous or difficult to access, people who live in rural areas, people who live along rivers, immigrants, children, the elderly, persons with impairments, and those who suffer from mental problems. Furthermore, it contributes to the strengthening of health care practices at various sites within the network, with the goals of preventing sickness, promoting health, and assisting in the recovery process.

In spite of this, in order for it to be effectively implemented, it must first be preceded by a thorough analysis of the health care services, network, and population's health care requirements that are present in the nation. In addition, the participation of all stakeholders who collaborate and share the nursing practice environment is required in order to align expectations regarding the professional capabilities and scope of APN practice. These stakeholders include customers, other types of professionals, and physicians.

In their efforts to get an understanding of the APN creation, implementation, and assessment process, a number of authors (6) identified six challenges that stand in the way of its introduction: 1. A misunderstanding of the terminology that is being used. 2. The roles and goals have not been stated in a clear and concise manner. 3. The replacement of physicians and the provision of assistance are the primary focuses. 4. Not every part of the APN has been utilized to its maximum potential. 5. The facts pertaining to the macrostructure, which include the society, the health care system, the nursing workforce, associations, agencies for professional regulation and standardization, training institutions, and workplaces, have not been fully analyzed. Only a small number of evidence-based strategies have been put into practice. For the purpose of ensuring that the implementation of EPA goes more smoothly, it is recommended that these factors be thoroughly addressed initially.

Objectives

1. To evaluate the efficacy and safety of the primary care that APNs provide.
2. To assess APNs' Potential to Help With Primary Care Shortages

METHODS

Literature search

Each and every procedure was carried out in a manner that was consistent with the requirements that were specified in the PRISMA Statement [22]. We conducted a comprehensive search of PubMed, Medline, and CINAHL with the assistance of an information specialist who is well-versed in the procedures of systematic review. Our goal was to locate randomized controlled trials (RCTs) that examined the outcomes of primary care services delivered by advanced practice nurses (APNs) and healthcare professionals to people. APN, primary care, patient outcomes, and randomised controlled trials were part of the original set of search keywords, along with a number of other broad categories. In the following step, specific terms were extracted from each of the groups. For example, the APN group included terms such as "nurse practitioner," "nurse clinicians," "advanced practice nursing," and so on. We extended the terms to include medical subject heading (MeSH) terms in addition to the more general ones whenever it was possible to do so. In order to guarantee that relevant articles are included, some examples of database-specific commands that are utilized include: ADJ, * (wildcard), family health clinic, patient satisfaction, family nurse practitioners, and random study. For the purpose of locating studies that were pertinent, we searched for every possible combination of terms that could be found in each category. There were additional search criteria, such as the publication being in English and the presence of an abstract. In this instance, a particular date range was not utilized.

Any studies that examined the economic evaluation of the included RCT samples or provided longer-term follow-up from these RCTs were also considered for inclusion. Randomized controlled trials (RCTs) that compared the results of primary care provided by independent practice nurses (APNs) and physicians were also considered for inclusion. Formerly known as advanced practice nurses (APNs), registered nurses who have earned advanced practice nursing degrees were formerly referred to as so. As a result, their responsibilities expanded beyond the provision of fundamental nursing care to include the diagnosis and treatment of patients. We did not include any review articles, research that did not contain original data, or designs that were not randomised controlled trials. The care provided by APNs was not the independent variable in these research, and further studies that exclusively included pediatric samples were not taken into consideration. Specifically, this is due to the fact that the outcomes of interest can differ between juvenile and adult patients, which makes the process of data assortment challenging. Additionally, in order to

supervise their own patient panel for the research, the advanced practice nurse (APN) was required to have the education and experience typical of a primary care physician (PCP).

The reviewers went through the titles of the articles to determine which ones were eligible for inclusion and which ones were not. This was done after the duplicates were removed. Following that, two reviewers separated themselves and worked independently to examine the abstracts and full texts of the studies that were discovered. Reviewers deliberated until they reached a consensus on whether or not a study was valid for inclusion, and/or whether or not the responsibilities of advanced practice nurses (APNs) were equal to those of primary care physicians (PCPs). In order to locate additional randomised controlled trials (RCTs) that satisfied the inclusion and exclusion criteria, a manual search was conducted via the reference lists of both the publications that were included and the systematic reviews that had been published in the past.

Quality appraisal

The bias assessment method developed by the Cochrane Collaboration [23] was utilized in order to evaluate the quality of the included studies. The instrument is comprised of seven criteria, which are as follows: the generation of random sequences, the concealment of allocations, the blinding of participants and staff, the blinding of the outcome assessor, the presence of incomplete outcome data, selective reporting of outcomes, and other types of bias. In this section, you will find ratings that are high, low, or ambiguous, as well as detailed instructions for evaluating the bias risk associated with each criterion. Two different reviewers were responsible for evaluating the quality of each study, and any differences that arose were resolved by debating them back and forth until all of the authors reached a consensus.

For research that included a cost outcome, the Quality of Health Economic research (QHES) instrument was also applied [24, 25]. This instrument consists of sixteen criteria that might be either "met" or "not met," depending on the circumstances. There is a weighted score that ranges from 0 to 100, with each criterion taking on a value that falls between 1 and 9. The economic evaluations were each examined independently by two reviewers, EL and AS; in situations where the scores were different, consensus was employed to arrive at a decision.

Data extraction and synthesis

Among the details that were extracted from the design, data set, and results of the study were the following: the size of the sample, the demographics of the patients and the rates of attrition, the number of practices and providers, the location of those practices, the description of the therapy, the length of time it was delivered, the points of data collection, the outcomes that were measured, and the statistical methodologies. We compiled the findings from a number of different investigations so that we could evaluate them side by side.

RESULTS

Literature search

During the initial search, a total of 784 objects were discovered. 109 of them were replicas that were identical to one another. Once additional screening was completed, 512 papers were disqualified after their titles were examined, and 125 papers were disqualified after their abstracts were examined. Following a thorough analysis of the material, thirty of the items were removed from consideration.

The fact that the study examined the outcomes of treatment provided by nurses who were not employed as primary care physicians was the most common reason for this exclusion because it was the most prevalent reason. It was determined that one publication could not be located despite the fact that repeated requests for inter-library borrowing were made; hence, it was not included [26]. Two economic evaluations of a randomized controlled trial (RCT) that was included in the study [35, 36], a two-year follow-up of the sample from the Mundinger et al. RCT [34], and seven RCTs [27-33] that were discovered during the hand search were among the 10 publications that were discovered.

Study characteristics

After combining the findings from seven different randomized controlled trials (RCTs), a total of ten studies were included in the analysis (Table 1). Twenty-seven, thirty-three, and thirty-three investigations were carried out in European countries. There was just one experiment that had been conducted in the United States that had a follow-up period of two years [32, 34].

Patients who came in for a primary care appointment for diabetes-specific treatment [27, 30], a general primary care visit [28, 32], a same-day consultation for any reason [31, 33], or any of a list of diseases and/or diabetes-related care [29] were each given a random number. This was done in order to ensure that patients received the most appropriate care possible. [32] One study addressed a high proportion of individuals with chronic conditions such as asthma, diabetes mellitus, and hypertension who did not have a regular source of care throughout the recruitment process at the emergency hospital.

Table 1 Characteristics of included studies

Author, year, country	Sample, setting	Provider type (number), intervention description	Data collection time points, attrition rate	Main outcomes
Dierick-van Daele, 2009, 2010[a] The Netherlands	APN group N = 817; physician group N = 684 Age (years): 42.8 ± 16.5 APN group, 46.1 ± 16.6 physician group Race/ethnicity: NR 15 general practices	NP (n = 12) vs. general practitioner (n = 50) Single consultation for pre-defined list of problems; any follow-up over 2 week duration	Data collection: Baseline Immediately after visit Attrition 32.8% at 2 weeks for follow-up questionnaire data, 6.9% for medical data	Effectiveness of consultation (health status) Patient satisfaction Direct costs[a] Productivity loss[a] Healthcare resource utilization Adherence to guidelines
Houweling, 2009 The Netherlands	APN group N = 50; physician group N = 43 Age (years): 63.1 ± 10.6 APN group, 59.6 ± 10.6 physician group Race/ethnicity: NR 2 hospital associated diabetes outpatient clinics	Nurse specialized in diabetes (n = NR) vs. internist (n = NR) All diabetes care, including blood pressure and lipid management, over 12 month duration	Data collection: Baseline 6 months 12 months Attrition 9.7% at 12 months	Physiologic measures (hemoglobin A1c, blood pressure, lipid profile, BMI) Quality of life, symptoms Patient satisfaction Healthcare costs Healthcare resource utilization
Houweling, 2011 The Netherlands	APN group N = 116; physician group N = 114 Age (years): 67.1 ± 11.0 APN group, 69.5 ± 10.6 physician group Race/ethnicity: NR Single group practice	Practice nurse (n = 2) vs. general practitioner (n = 2) All diabetes care, including blood pressure and lipid management, over 14 month duration	Data collection: Baseline 14 months Attrition 10.4% at 14 months	Physiologic measures (hemoglobin A1c, blood pressure, lipid profile, BMI) Quality of life, symptoms Patient satisfaction Process indicators (appropriate preventive care, therapy intensification)
Kinnersley, 2000 England and Wales	APN group N = NR; physician group N = NR; total N = 1465 Age ≥16 years: 62% APN group, 68% physician group Race/ethnicity: NR 10 general practices	NP (n = 10) vs. general practitioner (n = NR) Same-day consultation; any follow-up over 4 week duration	Data collection: Baseline Immediately after initial visit 2 weeks 4 weeks (audit data) Attrition 25% at 2 weeks for questionnaire data, 11% at 4 weeks for audit data	Symptom resolution Patient satisfaction Healthcare resource utilization Patient education Patient intentions for future care
Mundinger, 2000 and Lenz, 2004[b] United States	APN group N = 1181 (222[b]); physician group N = 800 (184[b]) Age (years): 45.5 ± NR APN group, 46.7 ± NR physician group Race/ethnicity: 90.3% Hispanic 5 primary care clinics at an urban academic medical center	NP (n = 7) vs. physician (n = 17) All primary care services over 1 year duration	Data collection: Baseline Immediately after initial visit 6 months 1 year 2 years[b] Attrition 0.05% at 6 months for medical data; 21% at 6 months for interview data	Physiologic measures (glycosylated hemoglobin, blood pressure, peak flow) Health status Patient satisfaction Healthcare resource utilization
Spitzer, 1974,	APN group N = 1529;	NP (n = 2) vs. family	Data collection:	Physiologic measures

1976[a] Canada	physician group N = 2796 (selected for interview cohort: APN group N = 340; physician group N = 614) Age >15 years: 80% Race/ethnicity: NR Large suburban primary care practice	physician (n = 2) All primary care services over 1 year duration	Baseline 1 year Attrition: NR	(mortality, physical function, social and emotional function) Patient satisfaction Cost of care, financial performance[a] Healthcare resource utilization[a] Quality of care, adherence to guidelines
Venning, 2000 England and Wales	APN group N = 651; physician group N = 665 Age >16 years: 67% Race/ethnicity: NR 20 general practices	NP (n = NR) vs. general practitioner (n = NR) Same-day consultation plus any follow-up within 2 week duration	Data collection: Baseline 2 weeks Attrition 24% at 2 weeks	Health status Patient satisfaction Cost of care Healthcare resource utilization

APN, advanced practice nurse; NR, not reported; BMI, body mass index.

The number of providers could range anywhere from two to fifty physicians and two to twelve advanced practice nurses, depending on the study that is being conducted. Two of the studies [27, 33] did not give any information regarding the number of providers who participated. Two studies indicated that patients in the control group received patient education from both a physician and a "standard nurse," but patients in the intervention group received treatment from an advanced practice nurse (APN) on their own [27, 28]. From one piece of study to the next, the titles that were utilized for advanced practice nurses (APNs) and physicians were different. The requirement that general practitioners (GPs) co-sign advanced practice nurse (APN) prescriptions [33] and the requirement that APNs stick to a specified treatment regimen when dealing with diabetes [27, 30] were two of the limits that were placed on advanced practice nurses (APNs). According to the findings of one study [32], when it comes to access to resources such as hospital admitting privileges, advanced practice nurses (APNs) and physician providers are on same footing. The lengths of time that patients were followed up for ranged anywhere from one day [29] to two years [34].

QUALITY APPRAISAL

Randomized controlled trials

When five out of the seven criteria were taken into consideration, the bulk of the studies showed very little indication of bias. A majority of the research indicated that the risk of bias for allocation concealment was either low or uncertain, whereas the majority of the research showed that the risk for random sequence generation was unclear (Fig. 1).

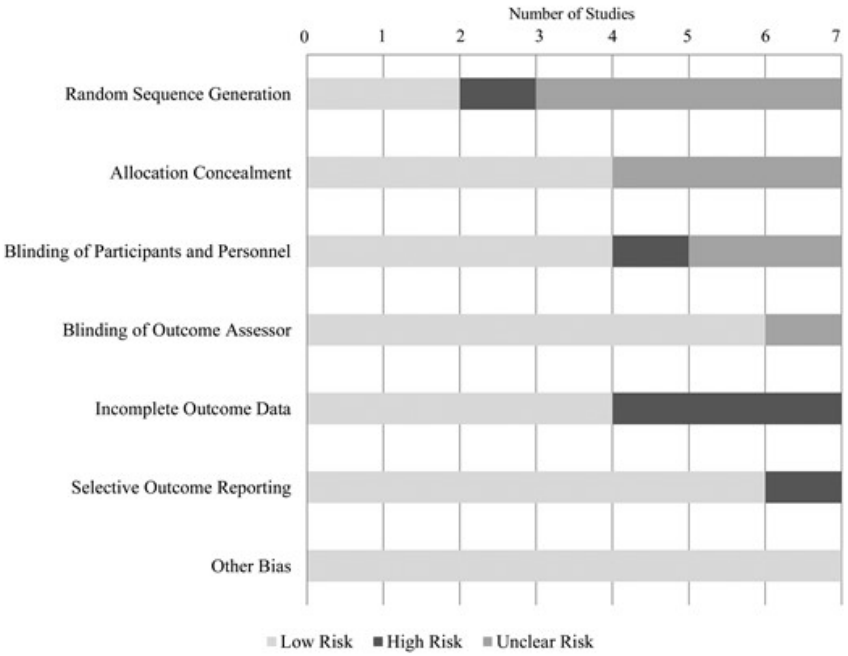

Figure 1An overview of the quality evaluation of RCTs.

A substantial risk of insufficient random sequence generation was seen in one of the studies [27], a moderate risk was there in two other studies [29, 33], and an unclear approach was included in four other studies [28, 30-32]. In four separate pieces of study [29, 31–33], the methods of allocation concealment were provided in detail. To ensure that study participants and those who evaluated the results remained anonymous, the majority of research employed blinding. There was a low probability of incomplete outcomes data in four of the studies (27, 28, 30, 32), while the risk of incomplete data was significant in three of the studies due to high attrition rates (29, 31, 33). In six different experiments [27–30, 32–33], there was a highly unlikely possibility of selectively reporting the outcomes. There was no evident risk of bias in the 'other bias' category for any of the randomised controlled trials (RCTs).

Economic evaluations

The randomized controlled trials (RCTs) [28, 29] were accompanied by two economic assessments [35, 36] that generated ratings of 51 (13 criteria satisfied) and 86 (all criteria met) respectively. Both of these scores were based on the fact that the assessments were conducted. Both pieces of research provided sufficient attention to detail regarding their approaches to estimating and forecasting costs, as well as providing explicit descriptions of their primary outcome measurements. One [35] determined the guiding viewpoint of the study, tested the cost estimate using a variety of various assumptions, and utilized scales that were accurate and dependable in order to evaluate the outcomes of the health study.

Outcomes results

Table 2 provides a summary of the findings from the physiologic, patient satisfaction, cost, and resource utilization evaluations that were conducted regarding each of the studies. There were three trials that completed their monitoring of the outcomes no later than four weeks following the initial study visit [29, 31, 33]. Additionally, there was one experiment that had a follow-up period of one day [29] for its individuals. In a single piece of research [34], the long-term impacts of patients who were kept in care for a period of two years were revealed.

Table 2 Selected outcomes results

Author, year	Outcomes: APN group vs. physician group			
	Physiologic	**Patient satisfaction (Instrument)**	**Cost**	**Healthcare resource utilization**
Dierick-van Daele, 2009, 2010[a]	N/A	8.2 ± 1.2 vs. 8.2 ± 1.3 (Investigator-developed instrument)	Direct cost per consultation based on salary (euros): 31.9 ± 36.3 vs. 40.2 ± 49.9[a]**	Consultation duration (min): 12.2 vs. 9.2* Referrals (percent of consultations): 12.0 vs. 14.2% Number of prescriptions per consultation: 1: 55.0 vs. 54.2% 2: 16.9 vs. 19.5% ≥3: 8.8 vs. 7.8%
Houweling, 2009	Change (95% CI) over 12 months: Systolic BP: −8.6 (−2.6, −14.7) vs. −4.0 (0.9, −8.9) mmHg Diastolic BP: −1.4 (1.4, −4.1) vs. −2.4 (0.8, −4.9) mmHg Total cholesterol: −0.4 (−0.2, −0.6) vs. −0.9 (−0.5, −1.3) mmol/l Cholesterol/HDL ratio: −0.4 (0.1, −0.6) vs. −0.9 (−0.5, −1.4)*** HbA1c: −1.5 (−1.0, −1.9) vs. −0.9 (−0.5, −1.3)%	73.9 vs. 53.3%* [Patients' Evaluation of the Quality of Diabetes Care (PEQD)]	Total salary costs over 12 months (euros): 114.6 ± 50.4 vs. 138.3 ± 48.3***	Consultation duration over 12 months (min): 272.0 ± 120.5 vs. 249.2 ± 110.7 Primary care visits over 12 months: 7.4 ± 3.0 vs. 9.8 ± 3.8**
Houweling, 2011	Change (95% CI) over 14 months: Systolic BP: −7.4 (−3.8, −10.9) vs. −5.6 (−2.3, −8.8) mmHg Diastolic BP: −3.2 (−1.3, −5.2) vs. −1.0 (−0.8, −2.8) mmHg Total Cholesterol: −0.1	66.4 vs. 51.7% (PEQD)	N/A	N/A

	(−0.3, 0.1) vs. −0.05 (−0.2, 0.1) mmol/l Cholesterol/HDL ratio: 0.03 (−0.1, 0.2) vs. 0.07 (−0.1, 0.2) HbA1c: −0.09 (−0.3, 0.1) vs. 0.03 (−0.2, 0.3)%			
Kinnersley, 2000	N/A	Mean score range across practice sites: 72.9–79.5 vs. 68.7–79.5% [Consultation Satisfaction Questionnaire (CSQ)]	N/A	Consultation duration: 10 vs. 6 min (statistically significant) Referrals (percent of consultations): 5 vs. 5% Prescription issued (percent of consultations): 63 vs. 63%
Mundinger, 2000 Lenz, 2004[b]	Value at 6 months: Systolic BP: 137 vs.139 mmHg Diastolic BP: 82 vs. 85 mmHg*** Glycosylated hemoglobin: 9.5 vs. 9.4% Value at 2 years: Systolic BP: 139.0 vs. 141.9 mmHg[b] Diastolic BP: 85.9 vs. 88.1 mmHg[b] Glycosylated hemoglobin: 8.9 vs. 10.3%[b]	Initial consultation: 4.59 vs. 4.60 At 6 months: 4.45 vs. 4.46 (Investigator-developed instrument based on Medical Outcomes Study) At 2 years: mean score range across categories 65.4–90.8 vs. 67.6–94.4%[b] [Patient Care Assessment Survey (PCAS)]	N/A	Primary care visits at 1 year: 0: 18.0 vs. 19.1% 1–4: 51.8 vs. 47.1% ≥5 visits: 30.4 vs. 33.8% Primary care visits (subgroup) Year 1: 3.6 vs. 4.2[b] Year 2: 1.8 vs. 2.5[b]*** ≥1 Hospitalization at 1 year: 8.5 vs. 9.8% ≥1 Hospitalization (subgroup): First year: 4.5 vs. 7.6%[b] Second year: 4.5 vs. 8.2%[b] ≥1 ED/urgent care visits at 1 year: 34.2 vs. 33.8% ≥1 ED/urgent care visits (subgroup): First year: 28.4 vs. 32.6%[b] Second year: 30.3 vs. 33.2%[b]
Spitzer, 1974, 1976[a]	N/A	96 vs. 97% (Instrument not specified)	Total UF-index: 297.0 vs. 285.7[a]	N/A
Venning, 2000	N/A	4.40 ± 0.46 vs. 4.24 ± 0.52)*** (Medical Interview Satisfaction Scale (MISS))	Total salary cost for initial and return consultation (pounds): 18.1 ± 33.4 vs. 20.7 ± 33.4	Consultation duration (min): 11.6 ± 5.8 vs. 7.3 ± 4.8* Referred to hospital (percent of consultations): 1.7 vs. 3.8% Prescription issued (percent of consultations): 61.0 vs. 64.7%

*P < 0.001; **P < 0.01; ***P < 0.05.

Physiologic measures

There were two studies that reported the results of lipids [27, 30], three studies that investigated the outcomes of blood pressure and glucose [27, 30, 32], and one study that included a follow-up study [34]. Unless you have a look at the ratio of cholesterol to high-density lipoprotein (HDL) [27] or the diastolic blood pressure at six months [32], both of which benefit the APN group, you won't be able to observe any significant differences between the groups. Despite the fact that a number of research examined advanced practice nurses (APNs) and physicians with regard to other physiological variables, such as mortality [28], changes in body mass index (BMI) [27, 30], changes in low-density lipoprotein [27], and peak expiratory flow rate [32, 34], these studies did not find any differences between the two groups.

In none of the research that investigated the participants' perceptions of their own health, different groups were found to be significantly different from one another. The Medical Outcomes Short Form 36 (SF-36) [32–34], the EQ5-D [29], assessments of disability or impaired ADLs and emotional and social functioning [28], and measurements of symptoms and their resolution [27, 30, 31] were some of the instruments that were utilized in order to accomplish this.

Patient satisfaction

In every study, the pleasure of the patients was the primary focus. Two studies [29,32] made modifications to preexisting instruments, four randomized controlled trials [27,30,31,33] and a follow-up study [34] employed instruments that had been validated in the past, and one research study [28] did not identify the satisfaction instrument. According to the findings of one study, patients who received treatment from advanced practice nurses (APNs) at three out of ten study sites reported higher levels of overall satisfaction [31]. Additionally, three studies revealed that patients who received care from APNs reported feeling more happy overall [27, 30, 33].

Cost of care

Numerous studies, including two randomized controlled trials [27, 33] and two economic evaluations [35, 36], investigated the discrepancies in healthcare costs. Two studies [27, 35] found that the cost of care provided by an advanced practice nurse (APN) was lower than the cost of treatment provided by a physician. The other two research analyzed costs based on the pay of the provider. It was demonstrated in a study that examined the costs of laboratory services and medication on an annual basis that APN care was more cost-effective for laboratory services, with a difference of 64.9 ± 34.5 euros compared to 91.5 ± 36.7 euros (P = 0.001). However, there were no differences in the costs of medication on a monthly basis between the two groups [27]. According to Spitzer et al. (1976), who examined healthcare spending using a Utilization and Financial Index that included provider salary along with lab, radiology, hospital, and out-of-pocket expenses, they discovered that there were no differences between the treatment provided by APNs and that provided by physicians [36].

Healthcare resource utilization

All of the research that was conducted presented findings regarding the utilization of healthcare resources. APN consultations were found to be 3.0 [29] to 4.3 [33] minutes longer than physician consultations [29, 31, 33], according to three of the four studies that investigated the duration of consultations [27, 29, 31, 33]. Two randomized controlled trials (RCTs) and one follow-up study reported contradictory results regarding the total number of primary care visits [27, 32]. These findings were found at the end of the first year of the investigations. It should be noted, however, that there were fewer visits among APN patients after two years [34]. One randomized controlled trial [32] and its follow-up analysis [34] found that there was no significant difference between the groups in terms of hospitalization or visits to the emergency room or urgent care center.

In the three studies that looked at referral rates and the two studies that looked at specialized care visit rates [32, 34], there were no differences between advanced practice nurses (APNs) and physicians. Among the three studies that investigated follow-up adherence, two of them [29, 33] indicated that advanced practice nurses (APNs) asked for a return visit more frequently, and patients were more likely to keep their scheduled appointment. On the other hand, two further research [29, 31, 33] investigated prescription patterns for diagnostic tests and pharmaceuticals. The first study [33] discovered that advanced practice nurses (APNs) ordered diagnostic tests more frequently than other medical professionals, but there were no differences in the practices of drug prescribing.

Process measures

Additionally, four investigations were conducted on the clinical process measures that were different. One of the three studies that investigated the degree to which doctors adhered to recommendations found that advanced practice nurses (APNs) were more likely to give treatment that was suitable for the patient's illness on five out of six measures [30].
Kinnersley et al. found that patients who were part of the medical group were less likely to say that they were informed about the underlying cause of their sickness, how to reduce symptoms, and what to do if the condition continued to exist. A 95% confidence interval (CI) of 0.44-0.76, an odds ratio (OR) of 0.32, and a 95% confidence interval (CI) of 0.24-0.43, respectively, all provided evidence that supported these findings. There were no differences in the percentage of patients who said that they were told about the predicted duration of their sickness and the steps that should be taken to prevent a recurrence of the illness.

CONCLUSION

According to the findings of this in-depth study, patients who receive primary care receive treatment from Advanced Practice Nurses (APNs) that is comparable to the care they would receive from a physician. Despite the fact that advanced practice nurses (APNs) may differ in the diagnostic testing and follow-up treatments they perform, they often provide care that is less expensive but maintains the same level of quality, adherence to standards, and overall patient education. In spite of the fact that the evaluation is restricted by a limited number of studies and brief follow-up periods, it provides a better degree of evidence by reducing the heterogeneity of the data. The study focuses particularly on randomized controlled trials (RCTs) that compare advanced practice nurses (APNs) to physicians in a direct comparison. The examination of patient retention rates, rates of preventative care, and long-term results all have the potential to assist in filling these gaps in future research. There is evidence to suggest that if the constraints governing the scope of practice were eased, advanced practice nurses (APNs) would be better able to put their training to use. This

will help ease the lack of primary care providers and result in an overall improvement in the efficiency and effectiveness of the healthcare system.

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