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RESEARCH ARTICLE

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ASSESSMENT OF IMPLEMENTATION OF THE PRADHAN MANTRI NATIONAL DIALYSIS PROGRAMME IN HOSPITALS IN DELHI

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ABSTRACT

Background: Annual-demand for haemodialysis-sessions in India is 3.4 Crores. To make Renal-care-services affordable to APL and free to BPL, Ministry of Health and Family Welfare launched Pradhan-Mantri National Dialysis-Programme (PMNDP). **Objective:** Aim of Study is to assess Implementation of PMNDP and suggest Recommendations for improvement. **Methods:** Out of 7 functional Dialysis Centres where PMNDP is operational in Delhi, 4 centres were randomly selected. In total, 170 respondents (enrolled in Dialysis-Units) were interviewed. In-depth-Interviews of healthcare-providers and secondary data-collection was also done. **Results:** The 4 dialysis-centres became functional during 2018-21. These 4 centres had 35 Haemodialysis-machines providing services to 200 patients on an average. One of the four centers visited for assessment conducted up to maximum 40 haemodialysis-sessions daily. Only two dialysis shifts were operational at the other three centers. On an average waiting-time is less than one hour at all the 4 centres visited. Two-thirds beneficiaries came to know about this programme from relatives, neighbours and after visiting various hospitals. No healthcare-worker Accredited Social Health Activist (ASHA) or Auxiliary Nurse Midwife (ANM) visited to counsel them in community to generate awareness. 43 % patients availed dialysis-services from private-centres initially, due-to lack-of awareness of-PMNDP. Dialysis-centres are not being fully utilized due to the lack of staff and patients. Only 1 Centre displayed The PMNDP FREE Dialysis Logo Signboard, the other three centres lacked PMNDP FREE Dialysis Logo displayed with the relevant details. Spread-of-awareness through IEC-BCC is required in community. PMNDP Portal and PMNDP Mobile app needs to be improved, to make them more user-friendly and useful for the patients seeking renal-care services. Service provider has Standard Operating Procedure Protocols (SOPs) for Dialysis Procedures. As per the SOP for Maintenance of Hemodialysis Machine Equipment, solution is prepared, and water rinse is given to all HD machines. Also, as per Standard Operating Procedure Protocols, filters and equipment are cleaned and maintained. Patients and families told that beneficiaries utilizing Dialysis services from PMNDP centres are satisfied and stated that they did not have to pay any cost for the Dialysis service under PMNDP. As per this study it was found that Three Hospitals didn't have blood-transfusion facilities for patients enrolled in PMNDP. Patients before undergoing haemodialysis, have to get arterio-venous-grafting placement with fistula from any outside-facility. This procedure is not covered under PMNDP. (Although as per Qualitative Studies, Arterio-Venous Fistula Insertion has been included). Also, no shoe-covers were observed at the entrance of Dialysis-area, depicting deficiency in effective Infection Prevention Control Practices in the Dialysis-Area. It was observed that, basic-amenities like number of seats, toilet-facilities, pest-control, fans, drinking-water, hygiene-practices for attendant-waiting-rooms were not adequate. Majority patients utilizing dialysis services from PMNDP centres, and their families were dissatisfied with doctor-patient interaction at the centres, and that no trained doctor was available for monitoring of the dialysis-sessions and examination of patients during dialysis sessions. Only one dialysis-unit had a nephrologist for effective monitoring during dialysis and to deal-with exigencies (which is not as per the Operational Guidelines of National Dialysis Programme, NHM). In case of emergencies, patients are referred to any tertiary care hospital, but without any referral-linkage helpful for these PMNDP beneficiaries. Patients are thus left to suffer the fate on their own, which leads to lack in building of trust among the patients and healthcare providers. Recruitment of nurses/doctors, standards as-per guidelines should be maintained. Some of the patients utilizing dialysis services from PMNDP centres died and few stopped coming. Details of these were not provided by the centre. Further studies must be done to find out the causes of deaths of these patients and those who discontinued. Internal Quality Improvement and Quality Assurance Program are required to be conducted regularly. Supervisory visit by third party will also be beneficial in providing insights regarding how to improve the Programme further. **Conclusion:** Patients and their families were asked what media source they preferred for building awareness and sharing information regarding this program. Patients and their attendantstold that they lacked prior knowledge of PMNDP from any media focus (e.g., on radio, television, or newspapers) on kidney disorders and treatment services (free Dialysis for the BPL and discounted rates of Dialysis for APL patients) being provided by Government. "Free Dialysis" at PMNDP-centres, did not appear in, Google-Search through digital-media. Thus, effective advertisement (Marketing of this Programme) on the Internet is required, so that,

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if patients/attendants are searching for “free dialysis centres”, they can easily locate programme facilities (and guidance regarding “enlisted-facilities” where dialysis-programme is available, “what-to-do”, “where to get fistula inserted” etc). PMNDP Portal and PMNDP Mobile app needs to be improved, to make them more user-friendly and useful for the patients seeking renal-care services. Audio-based Mobile-applications should be developed for educating patients in community which guide patients regarding availability of “Free Dialysis” services at enlisted-centres and related information. Dialysis-Programme Hand-outs should be shared with patients at help-desk (Reception itself). These Hand-outs should contain key information about Empanelled-centres, documentation-protocol explanations. Based on the Study, it was envisaged that it is essential to increase the number of Dialysis-centres and “Tie-up” with nearest Government health-facilities well-equipped with free-medicines, vascular-access-placement, availability of teleconsultation services, sample-collection, blood-transfusion facilities, reducing travel-cost and hassle for patients who live far-away from district-hospitals; especially as dialysis-sessions are required 3-times-a-week. Resuscitation medical-equipment, RO-water treatment-plant with output water-as per standards for haemodialysis, 24-hour back-up power-supply and quick referral in case of emergencies with 24x7 ambulance-connectivity is essential. Procurement can also be done through The Free Drugs Initiative under The National Health Mission (NHM). For maintaining quality standards of Clinical care, an effective Internal Quality Improvement Program and Quality Assurance must be conducted regularly, that documents, measures, analyses, and follows-up quality-indicators for providing Quality Dialysis-Treatments. Clinical outcomes should be measured and analysed. Supervisory-visits by Government-Officials may be conducted annually. Only 2 dialysis-units had a nephrologist for effectively monitoring patients during dialysis and to deal with exigencies (which is not as per the Operational Guidelines of National Dialysis Programme, NHM). Recruitment of nurses/doctors, standards as-per guidelines should be maintained. Specialised-Dialysis-Training Courses for MBBS-doctors posted at Dialysis-Centres should be formulated for holistic medical skill-based-training of healthcare-professionals. After successful completion of trainings, medical-staff should be certified. These specifically designed-courses (along-with Newly-Designed Training Modules) for Doctors and staff of Dialysis-centres should ensure availability of adequate manpower to provide healthcare services to CKD patients. Service-providers should also take initiative to train identified-staff for management during emergency, using ECG, resuscitation-kits etc. On-The-Job Trainings for Dialysis-Technicians. Short-Term-Trainings for nurses on HD and PD. To address requirement of specific-infrastructure, PPP-model may be used for conducting trainings.

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INTRODUCTION

Definition and Staging of Kidney Diseases: Chronic kidney disease (CKD) is gradual kidney damage (structural or decreased kidney function) for at least three months. Kidney damage includes pathologic anomalies in the native or transplanted kidney, established via radiological imaging, biopsy, or deduced from clinical markers like increased albuminuria - that is, albumin-to-creatinine ratio (ACR) >30 mg/g (3.4 mg/mMol), or urinary sediment alterations. Decreased kidney function refers to a reduced glomerular filtration rate (less than 60 mL/min per 1.73 m²)²⁹ which is usually estimated glomerular filtration rate (eGFR) from the serum concentration of creatinine.

Table 1. Stages of Kidney Disease according to eGFR Values²⁵

Stage	eGFR Value in (ml/min per 1.73 m ²)	Interpretation
1	More than 90	Normal range
2	60 - 89	Early-Stage Kidney Disease
3a	45 - 59	Mild to moderate loss of Kidney function
3b	30 - 44	Moderate to severe loss of Kidney function
4	15 - 29	Kidney Disease
5	Less than 15 or Treatment by Dialysis	Kidney Failure

Data source: National Kidney Foundation Diagnostic Tests and Procedures estimated glomerular filtration rate [cited 2023 Dec 20]. Available at: https://www.kidney.org/sites/default/files/estimated_glomerular_filtration_rate. GFR <60 ml/min/1.73 m² is decreased GFR (Table 1.1) and GFR <15 ml/min/1.73 m² is defined as kidney failure²¹. End Stage Renal Disease (ESRD) is complete loss of Kidney function for more than 3 months.



Figure 1. Stages of Kidney Disease according to eGFR Values²⁶

RESEARCH METHODS

In accordance with the objectives of the study listed in the previous chapter, the research design and methodological details are described as below:

Type of Study: It is a hospital based cross-sectional descriptive research study.

Study Area: The study was carried out at 4 dialysis centres functioning under PMNDP in Delhi. Out of the total 7 functional Dialysis-centres in Delhi where PMNDP is operational, 4 centres were randomly selected.

Study Population: The study population of the study comprised of healthcare providers working at dialysis centres and the patients utilizing dialysis services through PMNDP centres (Four Dialysis centres visited during Assessment where PMNDP is operational). In total, 170 respondents (enrolled in Dialysis-Units) were interviewed.

Sampling design and sample size: Out of the total 7 functional Dialysis-centres in Delhi where PMNDP is operational, 4 centres were randomly selected. In total, 170 respondents (enrolled in Dialysis-Units) were interviewed. Healthcare workers working at Dialysis centres were interviewed (4 Doctors, 16 Dialysis Technicians and 2 supporting staff).

Table 2. List of Dialysis centres included in the study

S. No.	Dialysis Centres
1	Bhagwan Mahavir Hospital, Pitampura, North-West Delhi
2	Deen Dayal Upadhyay Hospital, Hari Nagar, West Delhi
3	Guru Gobind Singh Hospital, Raghbir Nagar, Tagore Garden
4	Pandit Madan Mohan Malviya Hospital, South Delhi

With a view to better understand the awareness of Dialysis centres among patients and the factors affecting the utilization of centres, patients (170 users of Dialysis centres were selected and interviewed. (Figure 4.4.2).

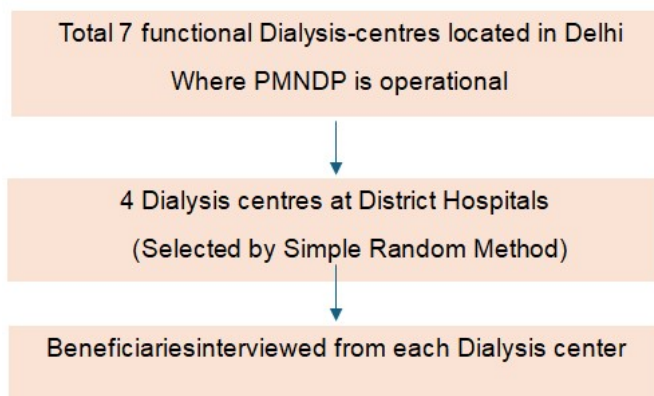


Figure 4.4.2. Sampling Design and sample selection

Data Collection Tools and techniques: Primary-data (Both qualitative and quantitative) was collected by Observation-Checklists, interview schedule for patients utilizing Dialysis services from PMNDP centres. In-depth Interviews of healthcare-providers were conducted to understand implementation-issues and to get Expert Opinion.

- **Observation checklists for PMNDP centres:** Observation checklist for PMNDP centre was prepared using Standard Operating Protocols for Dialysis Procedures (Annexure IV) and The Operational Guidelines of The National Dialysis Programme, NHM. These contain protocols for Dialysis procedures, maintenance, equipment, and services.
- **Interview schedule for Patients:** Interview of patients was conducted to find the level of awareness/knowledge, accessibility of PMNDP centres, quality of services and utilization of services. (Annexure VI)
- Other clinical information regarding co-morbidities, duration-of-treatment etc were also collected by taking brief patient-histories.
- **Interview schedule for Healthcare Providers:** Interview was conducted with the healthcare staff of PMNDP centres (Annexure V). Interview schedule was used to study the background of healthcare workers, challenges faced while providing services and suggestions to improve the service delivery.
- Official-records were gathered from three dialysis-units to collect information regarding services, performance, and other quality-parameters, patient-load, coverage, number of BPL and APL patients, distance from center, age, gender of beneficiaries, duration of utilizing renal-care services from the PMNDP center).

Data analysis

- After proper scrutiny, the collected data was entered and analysed systematically using descriptive and analytical techniques with the help of Microsoft Excel and SPSS version 20.
- According to the objectives of the Study, univariate, bivariate tables and graphs and charts were generated.
- Content Analysis of the Qualitative data was done.

RESULTS

Introduction: This chapter presents on the key findings from the study. The study data was gathered among patients utilizing Dialysis services and healthcare providers working at PMNDP centres. Two types of data analysed in this study. The quantitative findings which were derived from descriptive analysis of the interview schedule and presented in the form of percentages and tabular forms. The results cover the socio-demographic characteristics of patients, availability, accessibility of PMNDP centres, awareness of patients about renal-care services and PMNDP, friendliness and utilization of dialysis services through PMNDP centres. The results also include out of pocket expenditures paid by patients and their families utilizing renal care services from PMNDP. The majority of the OoPE paid was on medicines, diagnostic tests, insertion of vascular access and also for transportation. The results are organized according to the study objectives.

Utilization of PMNDP Dialysis services by patients of CKD: The 4 dialysis-centres became functional during 2018-21. These 4 centres had 35 Haemodialysis-machines providing services to 200 patients on an average. One of the four centers visited for assessment conducted up to maximum 40 haemodialysis-sessions daily. Only two dialysis shifts were operational at the other three centers. Duration of one Dialysis session is on average 4 hours. More than 93 % patients told that accessibility of renal care services has improved with launch of PMNDP. Patients before undergoing haemodialysis, have to get arterio-venous-grafting placement with vascular access from any outside-facility. This procedure is not covered under PMNDP. At these centres, one MBBS-Doctor, one Lead- Technician, four Technicians, two supporting-staff are posted. Only one empanelled-Nephrologist is manging 4 centres, twice in a month for examining beneficiaries. Post of Nephrologist has been vacant since long. Staffs of centre are vaccinated for Hepatitis-B, but not for Influenza, Pneumococcal-infection, as informed by team. Once patient comes to center with prescription from Nephrologist, registration-protocol under PMNDP is initiated.

Lead-Dialysis-Technician cross-checks the prescription and other investigations, documents. Dialysis-prescription by Nephrologists and number of recommended dialysis-sessions per week is also verified.

Medical-Officer assesses patients during admission and dialysis, attending medical-complaints. Lead-technician monitors work of dialysis-center, supports technicians, facilitates maintaining records, reviews processes being followed in center. Junior-technicians take vitals, monitor patients during dialysis and administer medicine, IV fluids, also maintain patient-records. It was informed that although there is no structured training-module, service-provider gives refresher training on standard-procedure-protocols, half-yearly for on the job and newly joined staff half yearly. Drill for CPR and emergency conditions outlined are performed regularly. Dialysis-cards of the beneficiaries who bring their cards are updated at center regularly, with vitals and weight-recording before and after procedure. Patient needs to do HIV, Hep-B, Hep-C confirmatory-tests through ELISA as per the SoP of service-provider. More than 60 % beneficiaries use private-facilities for diagnostic-services. Patients utilizing dialysis services from these PMNDP centres have to get these tests done quarterly. For obtaining Erythropoietin-injections, patients had to wait in multiple-lines. It was found that about (three-fourth) 75 % beneficiaries paid Rs 2302 monthly cost of medicines on average. About three-fifth (59.41%) beneficiaries paid about Rs 13,000 on average for vascular access placement. 3 Hospitals didn't have blood-transfusion-facilities for beneficiaries of PMNDP. There is no backlog or waiting-period in the center visited. In case of any emergency, initial management is done by the Medical-Officer posted at dialysis-center. The service provider provides resuscitation facilities with crash cart for providing lifesaving support if required by patients within the dialysis facility.⁵ If further assistance is needed, they seek support of on-duty Doctor of the Hospital. 82 % patients (n=139, out of total 170 beneficiaries) utilizing Dialysis services from PMNDP and their families reported no facilities for teleconsultation-services being available for medical-advises in case of need. Grievance redressal mechanism was not observed to be functional. Patients utilizing dialysis services from PMNDP felt safer getting Haemodialysis (HD) under medical-supervision at centres instead of Peritoneal-Dialysis (PD). Despite potential advantages of PD avoiding long-travel to dialysis-centers and comfort of home-based therapy, utilization of PD is poor. None of beneficiary reported utilizing PD. High-cost supplies also being a reason, as told by beneficiaries. Some of the patients utilizing dialysis services from PMNDP centres died and few stopped coming. Details of these were not provided to the researcher by the centre. Dialyzer-reprocessing-machines are available in all Dialysis-centers. For all beneficiaries one reprocessed-dialyzer is being used on average 10-times. Dialyzers are stored with "patient-name" mentioned as-per guidelines for re-use. RO-water is being tested quarterly for microbial-growth, and monthly chemical-testing, hardness of water is tested regularly. Biomedical-waste-disposal is done appropriately as-per guidelines.

Dialysis services under PMNDP⁵: The Project is awarded for a period of 5 years and the Service Provider is obliged to establish, manage, and operate the Project in accordance with the provisions of a Contract Agreement and terms and conditions therein. It could be cancelled at any time after providing an opportunity of hearing by the Authority, in case the contractor does not follow the rules, regulations and terms and condition of the contract.⁵ Installation of One Dialysis facility for every district/sub-district hospital; (for districts having population less than 7.5 Lakhs, one facility shall be installed for every 2 or more districts or as per state's discretion)⁵ At the 4 centres assessed, The Authority has provided the required space, for establishing the Project along with an agreement for the term and value as declared by the authority.⁵ (The service provider arranges for a space at its own cost in proximity to the hospital within 3 kilometres of the hospital premises in district where government cannot provide space for the facility and then makes complete arrangements as detailed above)⁵ The Service Provider is responsible for operationalization of Dialysis facility at district to the patients referred by District Hospital.⁵ Ownership status of all movable assets created from the investments made by the Service Provider remain with the Service Provider. This could be achieved by a mix of any of the following⁵:

The service provider is allotted a space (as per Guidelines it has to be 120 square foot (sq. ft.) per machine by the authority and the service provide has made complete arrangements to make the dialysis facility operational (required infrastructure, HR (Medical officers, Nurses, technicians), supportive infrastructure, dialyzer, and all other consumables etc., operational and maintenance cost for the project including consumables and facility.⁵As per Operation Guidelines NHM National Dialysis Programme⁵, According to Pradhan Mantri National Dialysis Programme under NHM, Ministry of Health and Family Welfare GOI Data Source: Available at https://main.mohfw.gov.in/sites/default/files/Pradhan%20Mantri%20National%20Dialysis%20Programme%20under%20NHM_0.pdf. The obligations of the service provider/firm under this service contract includes all service activities and commitments. The details of various services required at different locations and type of facilities has been provided. The Service Provider is not entitled to levy any charge on the patients utilizing dialysis services from PMNDP. The services are to be provided completely cashless to all patients referred by district/sub-district hospitals.⁵ A minimum of 4 Dialysis machines plus one dedicated machine for infective cases (Hepatitis B, Hepatitis C, HIV etc)⁵ The Service provider has to provide 24X7 (round the clock) dialysis services, if required to meet the workload ensuring that no patient has a wait time of more than 24 hours from the scheduled dialysis session.⁵ Availability of Space, Electricity, water, is provided by the authority. Further, the increase in dialysis units shall be

according to space availability and in case of space constraint the service provider shall create a facility within 3 Km of district hospital to meet patient load.⁵

Also, as per Operational Guidelines of the National Dialysis Programme NHM, Provision of facilities such as observation rooms, recovery rooms⁵ is also included. Provision of dashboard for monitoring of service delivery with due diligence to patient privacy for administrative Staff. Treating Nephrologist should have complete access to the dashboard.⁵ SMS based appointment system for all patients enrolled for services.⁵

Service provider has Standard Operating Protocols (SOPs) for:

Commencing Haemodialysis Treatment
 Completing Haemodialysis Treatment
 Management of Cardiac Arrest in Dialysis Centre
 Preparation of Dialyzer and Blood Tubing
 Manual Reprocessing of Dialyzer and Blood Tubing
 Blood Investigations for Dialysis Patients
 Use and Care of Dialysis Catheter, AV Fistula
 Anticoagulation in Haemodialysis
 Dialyzer and Blood Tubing Cleaning and Disinfection
 Equipment Maintenance and Cleaning in dialysis Unit
 Dilution of chemicals – Hypochlorite 1%, Dialyzer Disinfectant

Service Provider shall ensure best quality of tests and protocols and shall submit a half yearly report of clinical audit done by a third party or as nominated by the authority. Service provider to provide the Kt/v and standardised Kt/V report for each patient to the committee.⁵ Annual review of performance and observance of terms & conditions shall be carried out by a committee which shall include CMO & Head of department of Nephrology of the Govt. Teaching hospital along with other members nominated by the authority. The report of this annual review shall form the basis for extension of the contract annually within the contract period.⁵ The service provider has to maintain an uptime of 90% with maximum 7 days of downtime at a stretch of any single dialysis machine of the facility. In case the service provider fails to do so, the provider shall pay a sum equivalent to cost of a single dialysis multiplied by total number of dialysis done per day during the given month, for each day of shutdown beyond 7 days. If shut down extends beyond 30 days due to technical and/or administrative reasons on the part of service provider, the contract may be cancelled. Contractor shall make alternative arrangements for provision of dialysis (including free transportation of patients utilizing dialysis services from PMNDP) in case the machine is out of order/ broken down for period greater than 24 hours.⁵

Accessibility: Under this section (See Table 5.3.2) variables that affect the accessibility of PMNDP centres are shown including time to reach the centre, waiting time in the dialysis centre was determined by interviewing the patients utilizing PMNDP services. (n=170)

Table 5.3.2 Factors affecting the Accessibility of PMNDP centres

S. No.	Factors affecting the Accessibility of PMNDP Centres	Time	Number of Patients	Percentage of Patients (%)
1	Time to reach PMNDP Centre	<40 min	15	8.82
		>40 min	155	91.18
2	Waiting Time	Less than 1 hour	170	100

About 91.18 % (n = 155) out of 170 patients who utilized dialysis services from PMNDP centres, had to travel for more than 40 minutes to reach these dialysis centres. Majority of patients were found to be satisfied with the timings allotted to them by these centre. Service Provider arranges for IEC (Information education-communication) material for facility as decided by the authority.⁵ 67 % of beneficiaries came to know about this programme from relatives, neighbours and after visiting various hospitals. No healthcare-worker Accredited Social Health Activist (ASHA) or Auxiliary Nurse Midwife (ANM) visited to counsel them in community to generate awareness.

Waiting-time is less than one hour at all the 4 centres visited for assessment. Patients/attendants are aware regarding the days and timings of Dialysis Sessions at all 4 PMNDP centres. Only 1 Centre displayed The PMNDP FREE Dialysis Logo Signboard, the other three centres lacked PMNDP FREE Dialysis Logo displayed with the relevant details.

Availability of PMNDP centres for Utilization: This section describes findings related to availability of facilities at the PMNDP centres including physical infrastructure and basic facilities under general facility status and availability of trained staff to provide dialysis services, adequate equipment, medicines, and consumables. Table 5.3.3 describes the general facility status, and it shows that basic-amenities like number of seats, functional toilet-facilities, pest-control, fans, clean drinking-water, hygiene-practices for attendant-waiting-rooms were not found to be adequate. Separate dedicated space for dialysis centre has been allotted. Cleanliness in the Dialysis area in all the 4 PMNDP centres visited was satisfactory. Clean surroundings were not available in one Dialysis centre. All the PMNDP centers were functional 6 days a week.

Only 1 out of 4 PMNDP centres displayed The PMNDP FREE Dialysis Logo Signboard, the other three centres lacked PMNDP FREE Dialysis Logo displayed with the relevant details. All the PMNDP centres have IEC materials regarding renal care services on display. Table 5.3.4 describes the availability of trained health care staff for providing dialysis services. The training was conducted for 2 days duration to provide necessary knowledge and skills regarding dialysis services provided by the Lead Technician. 66.66 % (n=16) of healthcare staff interviewed had received training, out of which no medical officers had received training in dialysis/renal-care. All staff including supportive staff is educated with clear instruction on handling blood spillage on equipment and the floor. In case of blood-stained surface, it is soaked and cleaned with 1:100 sodium hypochlorite if the surface is compatible with this type of chemical treatment. It was observed that, basic-amenities like number of seats, toilet-facilities, pest-control, fans, drinking-water, hygiene-practices for attendant-waiting-rooms were not adequate. Dialysis-services are provided 6 days-a -week from 6 AM to 10 PM at one center in 4 shifts. And the remaining centres have two shifts from 7 AM to 7 PM. These Dialysis-Centers had dialysis-area, corridors, attendant-waiting-area, storeroom, dialyzer-reprocessing-unit, doctor/staff room etc. Basic-equipment like BP-apparatus, stethoscope, weighing-scale along-with resuscitation-equipment (Ambu-bag, defibrillator, pulse-oximeter, etc.) were available in all Dialysis-Centres. No shoe-covers were observed at the entrance of Dialysis-area to ensure effective Infection Prevention Control Practices in the Dialysis-Area.

Table 5.3.3. General Facility Status of PMNDP centres (n=4)

Hospital	Centre 1	Centre 2	Centre 3	Centre 4
Waiting Area	Sufficient	Insufficient	Insufficient	Sufficient
Waiting area	Adequate	Inadequate	Adequate	Adequate
Number of seats in waiting area	Inadequate	Inadequate	Inadequate	Inadequate
Sitting/waiting area Cleanliness	Average	Average	Good	Average
Fans in the sitting/waiting area	Adequate	Adequate	Adequate	Adequate
Toilet for patients/attendants	Available and clean	Available dirty	Available	Unavailable
Environmental control: Pests, mosquitos, temperature, humidity, stray animals, arthropods/vector breeding (mosquitos, ticks, fleas)	Yes	No Stray animals	Yes	No
Are the surroundings of the facility clean?	Yes	To some extent	To some extent	Yes
Reception area / Registration	Yes	Yes	Yes	Yes
General Appearance and Upkeep	Good	Average	Good	Average
Seem welcoming overall?	Yes	Yes	Yes	Yes
Cleanliness and hygiene	Yes	Yes	Yes	Yes
Dedicated separate space for Haemodialysis beds and machines	Yes	Yes	Yes	Yes
Number of Dialysis Machines	13	5	10	10
Number of beds in the Dialysis Centre	13	5	10	11
Whether spacing adequate per Dialysis Machine – 6 m2 – bed/ chair/ Dialysis equipment	Adequate	Adequate	Adequate	Adequate
Signboards with PMNDP Logo only at 1 Centre, rest 3 didn't have Signboards with PMNDP FREE Dialysis LOGO	No	No	Yes	No
Signboard that mentions the Dialysis Centre ?	No	Yes	Yes	Yes
PMNDP logo	No	No	Yes	No
Wayfinding/Signage	No	Yes	Yes	Yes
Office phone number	Available	Available	Available	Available
Separate haemodialysis machine designated solely for use of Hepatitis B and HCV infected patients.	Yes	No	Yes	Yes
Work area that contains a work counter, hand washing sink, storage cabinets.	Yes	Yes	Yes	Yes
Nursing station located in an area that allows adequate surveillance of patients on haemodialysis machines.	Yes	Yes	Yes	Yes
Disabled and elderly friendly infrastructure Elevators, escalators Fall protection measures: Handrails Ramps	Yes	Yes	Yes	No handrails Ramps Yes
Fire safety	Yes	Yes	Yes	Yes
24-hour Electricity source	Direct supply District Hospital, Bill payment by private company	Direct supply District Hospital, Bill payment by private company	Direct supply District Hospital, Bill payment by private company	Direct supply District Hospital, Bill payment by private company
Waste management	Yes	Yes	Yes	Yes
Effective and suitable ventilation to maintain comfortable room temperature.	Yes	No	No	No
Display of IEC material	Yes	Yes	Yes	Yes
Have information, education and communication materials specifically developed for patients?	No	No	No	No
24-hour provision of potable water .R.O. for drinking and hand hygiene	No	Yes	Yes	No
Cleanliness, Infection control practices	Good	Good	Good	Average
Assistance for registration procedure	Yes	Yes	Yes	Yes
Safe storage	Yes	Yes	Yes	Yes
Linen collected, transported, and washed separately in clean and hygienic environment.	Yes	Yes	Yes	Yes
Where linen is contaminated, appropriate decontamination carried prior to despatch for washing.	Yes	Yes	Yes	Yes
Standard precautions like practicing hand hygiene, use of personal protection equipment, etc to reduce the risk of healthcare associated infections.	Yes	Yes	Yes	Yes
Is there a cumulative patient coverage chart on the wall?	Yes	Yes	Yes	Yes

It is recommended to have the following minimum standards and staffing pattern for the Dialysis unit.

Table 5.3.4 Human Resources as per Guidelines

Serial No	Staff Ratio
1	1 Qualified Nephrologist / MD Medicine with one year dialysis training from recognized center performing one visit every fortnight and clinical review for all patients
2	2 Medical Officers (on duty) - One doctor (MBBS) per shift for a maximum of 10 machines.
3	3 Dialysis technicians/nurses: One technician for every 3 machines and one dedicated for dialysis machine for patients with blood borne infections per shift
4	3 Dietician (optional)
5	4 sweepers 1 for every five machine per shift
6	Hospital attendant 1 for every five machines per shift

Table 5.3.5 Availability of Trained Human Resources at PMNDP centres (n=26)

S. No.	Human Resources Available at these 4 PMNDP centres	Training Status	Number of staff at these 4 PMNDP centres	Percent Age (%) of Staff	As per Operational Guidelines, Number should be
1	Nephrologist	Trained	2	50	4
2	Medical Officers	Trained	0	0	8
		Untrained	4	100	
3	Dialysis Technicians	Trained	16	94.12	14
		Untrained	1	5.88	
4	Supportive staff including sweepers, guards/ Hospital attendants		8	100	20

Table 5.3.6 Availability of Emergency Equipment

Equipment	Availability
Resuscitation equipment including Laryngoscope, endotracheal tubes, suction equipment, xylocaine spray, oropharyngeal and nasopharyngeal airways, Ambu Bag	Available
Suction Apparatus	Not available
Defibrillator with accessories	Available
Equipment for dressing/bandaging/suturing	Available
Basic diagnostic equipment- Blood Pressure Apparatus, Stethoscope, weighing machine, thermometer	Available
ECG Machine	Available
Pulse Oximeter	Available
Dialyzer reprocessing unit	Available
Cardiac monitors	Available
Vein finder	Not available
Haemodialysis Machine and associated systems	HD Machine and Equipment available at all the 4 centres visited.
Dialyzer	Available
Dialyzer (filter)	Available
Dialysis fluid	Available
Other consumables	Available
Majority of the equipment, drugs, furniture, services as per program guidelines were available at the centre.	Available

Patients and their families were asked what media source they preferred for building awareness and sharing information regarding this program. And more than 80 % of them told that they would prefer digital media including mobiles as the source of creating awareness in community regarding free dialysis services being provided by Government through this Programme. In Table 4 we can see that advertisement through digital media needs to improve tremendously to gain attention of the general community and patients. Analysis revealed that patients lacked prior knowledge of PMNDP from any media focus (e.g., on radio, television, or newspapers) on kidney disorders and treatment services (free Dialysis for the BPL and discounted rates of Dialysis for APL patients) being provided by Government. Patients told that they lacked prior knowledge of PMNDP from any media focus (e.g., on radio, television, or newspapers) on kidney disorders and treatment services (free Dialysis for the BPL and discounted rates of Dialysis for APL patients) being provided by Government.

Table 5.3.7 Prior Knowledge of patients about PMNDP

Source of Information About PMNDP	Age								Grand Total
	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	
Multiple hospital visits	25%	55%	48%	56%	53%	32%	43%	100%	49%
Doctor	50%	23%	18%	26%	23%	41%	29%	0%	25%
Friends/Relatives	0%	18%	23%	3%	10%	14%	0%	0%	12%
Neighbours	25%	0%	8%	3%	3%	0%	29%	0%	5%
IEC	0%	5%	3%	9%	5%	0%	0%	0%	4%
Healthcare staff	0%	0%	3%	3%	3%	9%	0%	0%	3%
Digital Media	0%	0%	0%	0%	5%	0%	0%	0%	1%
Neighbour	0%	0%	0%	0%	0%	5%	0%	0%	1%
Grand Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

As per Table 5.3.7, it was found that, 67 % of beneficiaries came to know about this programme from relatives, neighbours and after visiting various hospitals. No healthcare-worker Accredited Social Health Activist (ASHA) or Auxiliary Nurse Midwife (ANM) visited to counsel them in community to generate awareness. The table depicts that out of all the sources of information, digital-media was reported as the least-prevalent source. For utilizing Dialysis centres, distance and cost play a major role.

Table 5.3.8. Utilization of Services: Distance travelled to Dialysis centre by beneficiary for renal-care

Distance Travelled for First chosen Dialysis centre In Kms	Number Of Patients	Changed Centre	Number of Patients who found a nearby centre	Average Reduction In Distance		
1-10	84	45	16	32%	54%	36%
11-20	55	37	33	33%	67%	89%
21-30	18	13	10	47%	72%	77%
31-40	10	9	9	67%	90%	100%
41-50	1	1	1	87%	100%	100%
51-60	2	2	2	46%	100%	100%
Grand Total	170	107	71	40%	63%	66%

Implementation Issues: Enrolled Patients (n=170) were asked if they experienced any challenges in utilizing services from PMNDP centres. Then analysis of the data collected was carried out to show how patients utilize dialysis services and what could be the factors affecting utilization of PMNDP services. Also, as per observation of researcher and from the data collected through conducting Interviews of the healthcare providers, it was found that out of the 4 Dialysis centres visited for assessment, only 1 centre was providing Dialysis-services in 4 shifts from 6 AM to 10 PM. And the remaining centres had two shifts operational from 7 AM to 7 PM for providing dialysis services to the patients enrolled in PMNDP. Dialysis-centres are not being fully utilized due to the lack of staff, patients.

DISCUSSION

As per Qualitative Studies, from Interviews, awareness level of patients was low. Patients who have low literacy levels, awareness is also low, and this leads to delay in diagnosis and availing appropriate management. Late presentation of patients with kidney failure increases morbidity, mortality and associated healthcare costs. Dealing with more urgent priorities of day-to-day living, leads to delay in gaining knowledge of this chronic disorder of kidney dysfunction, which in initial stages might not have immediate consequences.

Factors influencing Utilization of PMNDP services

Awareness of PMNDP: Two-thirds beneficiaries came to know about this programme from relatives, neighbours and after visiting various hospitals. No healthcare-worker Accredited Social Health Activist (ASHA) or Auxiliary Nurse Midwife (ANM) visited to counsel them in community to generate awareness. 43 % patients availed dialysis-services from private-centres initially, due-to lack-of awareness of-PMNDP. Only 1 Centre displayed The PMNDP FREE Dialysis Logo Signboard, the other three centres lacked PMNDP FREE Dialysis Logo displayed with the relevant details. "Free Dialysis" at PMNDP-centres, did not appear in, Google-Search through digital-media. Dialysis-services are provided 6 days-a -week from 6 AM to 10 PM at one center in 4 shifts. And the remaining centres have two shifts from 7 AM to 7 PM. No trained doctor was available for monitoring of the dialysis-sessions and examination of patients during dialysis sessions. Only 2 dialysis-units had a nephrologist for effective monitoring during dialysis and to deal with exigencies. Dialysis centres are not being optimally utilized. Thus, building awareness in community through IEC BCC activities is essential.

CONCLUSION AND RECOMMENDATIONS

PMNDP centres started being operational in Delhi in 2018. Two-thirds beneficiaries came to know about this programme from relatives, neighbours and after visiting various hospitals. No healthcare-worker Accredited Social Health Activist (ASHA) or Auxiliary Nurse Midwife (ANM) visited to counsel them in community to generate awareness. 43 % patients availed dialysis-services from private-centres initially, due-to lack-of awareness of-PMNDP. Only 1 Centre displayed The PMNDP FREE Dialysis Logo Signboard, the other three centres lacked PMNDP FREE Dialysis Logo displayed with the relevant details. Patients and their families were asked what media source they preferred for building awareness and sharing information regarding this program. And more than 95 % of them told they would prefer digital media including mobiles as the source of creating awareness in community regarding free dialysis services being provided by Government through this Programme. As per data analysis, in Table 4 we can see that advertisement through digital media still needs to improve tremendously to gain attention of the general community and patients. Patients also told that they lacked prior knowledge of PMNDP from any media focus (e.g., on radio, television, or newspapers) on kidney disorders and treatment services (free Dialysis for the BPL and discounted rates of Dialysis for APL patients) being provided by Government. "Free Dialysis" at PMNDP-centres, did not appear in, Google-Search through digital-media. Thus, effective advertisement (Marketing of this Programme) on the Internet is required, so that, if patients/attendants are searching for "free dialysis centres", they can easily locate programme facilities (and guidance regarding "enlisted-facilities" where dialysis-programme is available, "what-to-do", "where to get fistula inserted" etc). PMNDP Portal and PMNDP Mobile app needs to be improved, to make them more user-friendly and useful for the patients seeking renal-care services. Audio-based Mobile-applications should be developed for educating patients in community which guide patients regarding availability of "Free Dialysis" services at enlisted-centres and related information. Dialysis-Programme Hand-outs should be shared with patients at help-desk (Reception itself). These Hand-outs should contain key-information about Empanelled-centres, documentation-protocol explanations.

REFERENCES

- Bharati, J. and Jha, V. (2020) 'Global dialysis perspective: India', *Kidney360*, 1(10), pp. 1143–1147. doi:10.34067/kid.0003982020.
- Bharati, J. and Jha, V. (2020) 'Global dialysis perspective: India', *Kidney360*, 1(10), pp. 1143–1147. doi:10.34067/kid.0003982020.
- Bikbov B, Perico N, Remuzzi G. Disparities in chronic kidney disease prevalence among males and females in 195 countries: analysis of the Global Burden of Disease 2016 Study. *Nephron*. 2018;139:313–8. [PubMed] [Google Scholar]
- Calista L. Dominy Ethan B. Shamsian Recent innovations in renal replacement technology and potential applications to transplantation and dialysis patients: a review of current methods. *Kidney Res Clin Pract*. 2023 Jan National Institutes of Health National Library of Medicine National Center for Biotechnology Information. Available on: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9902727/>
- Chapter 1: Definition and classification of CKD Available from: Chapter 1: Definition and classification of CKD (kissupplements.org)

- Chapter 1: Definition and classification of CKD. *Kidney International Supplements*. 2013;3(1):19–62. doi:10.1038/kisup.2012.64 Available from: Chapter 1: Definition and classification of CKD - PubMed (nih.gov)
- Chronic kidney disease in adults: Assessment and Management [Internet]. U.S. National Library of Medicine; [cited 2023 Dec 21]. Available from: <https://pubmed.ncbi.nlm.nih.gov/32208570/>
- Clinical epidemiology and global health (no date) *Clinical Epidemiology and Global Health | Journal | ScienceDirect.com* by Elsevier. Available at: <https://www.sciencedirect.com/journal/clinical-epidemiology-and-global-health> (Accessed: 09 January 2024).
- Cost of haemodialysis in a public sector tertiary hospital of India: Kaur G, Prinja S, Ramachandran R, Malhotra P, Gupta K, Jha V. *Cost of haemodialysis in a public sector tertiary hospital of India. Clinical Kidney Journal*. 2018;11(5):726-733.
- Current trends in kidney transplantation in India Available from: Current trends in kidney transplantation in India - PMC (nih.gov)
- Deeksha Rani, Raman Kalia et al (2022) [9] conducted study on Activities of Daily Living (ADL) and Fatigue Among Patients Undergoing Haemodialysis
- Faulhaber L, Herget-Rosenthal S, Jacobs H, Hoffmann F. Health-related quality of life according to renal function: Results from a nationwide health interview and examination survey. *Kidney and Blood Pressure Research*. 2021;47(1):13–22. doi:10.1159/000518668
- Glasscock RJ, Winearls C. Screening for CKD with EGFR: Doubts and dangers [Internet]. U.S. National Library of Medicine; 2008 [cited 2023 Dec 20]. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4571145/>
- Gupta D, Jyani G, Ramachandran R, Bahuguna P, Ameel M, Dahiya B et al. Peritoneal dialysis—first initiative in India: a cost-effectiveness analysis. *Clinical Kidney Journal*. 2021;15(1):128-135.
- Healthcare schemes for hemodialysis patients in India: An overview and utilization in selected hospitals Available at: https://www.researchgate.net/publication/365751143_Healthcare_schemes_for_Hemodialysis_patients_in_India_An_Overview_and_Utilization_in_selected_hospitals (Accessed: 09 January 2024).
- High impact low-cost solution IHCI WHO available from: <https://www.who.int/india/news/detail/02-06-2022-india-hypertension-control-initiative--a-high-impact-and-low-cost-solution>
- Home - nathealth. Available at: <https://nathealthindia.org/> (Accessed: 09 January 2024).
- Home | Pradhan Mantri National Dialysis Programme, Pradhan Mantri National Dialysis Programme | National Health Portal Of India [Internet]. Nhp.gov.in. 2022 [cited 23 August 2022]. Available from: https://www.nhp.gov.in/pradhan-mantri-national-dialysis-programme_pg
- <https://www.kidney.org/NationalKidneyFoundation/DiagnosticTestsandProcedures/estimatedglomerularfiltrationrate> [cited 2023 Dec 20]. Available from: https://www.kidney.org/sites/default/files/estimated_glomerular_filtration_rate
- IHCI Indian Hypertension Control Initiative Data source: available from: <https://www.ihci.in>
- Introduction of Pradhan Mantri National Dialysis Program (PMNDP) (no date) Home | Pradhan Mantri National Dialysis Programme, Available at: <https://pmndp.mohfw.gov.in/en> (Accessed: 09 January 2024).
- Introduction of Pradhan Mantri National Dialysis Program (PMNDP) [Internet]. [cited 2023 Dec 22]. Available from: <https://pmndp.mohfw.gov.in/en/introduction-of-pradhan-mantri-national-dialysis-program-pmndp>
- KDIGO 2023 clinical practice guideline for the evaluation and management of chronic kidney disease public review draft July 2023 Available at: [Internet]. [cited 2023 Dec 21]. Available from: https://kdigo.org/wp-content/uploads/2017/02/KDIGO-2023-CKD-Guideline-Public-Review-Draft_5-July-2023.pdf
- Kidney Health for All' - Implications for India: *Indian Journal of Kidney Diseases 'Kidney Health for All' - Implications for India* available from: https://www.researchgate.net/publication/371315910_Kidney_Health_for_All_-_Implications_for_India
- Liyanage, T. et al. (2022) 'Prevalence of chronic kidney disease in Asia: A systematic review and analysis', *BMJ Global Health*, 7(1). doi:10.1136/bmjgh-2021-007525.
- Medical officers' manual for prevention and management of chronic kidney diseases 2022 [Internet]. [cited 2023 Dec 21]. Available from: <https://main.mohfw.gov.in/sites/default/files/Fin%20-%20CKD%20guidelines.pdf>
- Naik G, Ligade V, Prasad S, Guddattu V, D S. Healthcare schemes for hemodialysis patients in India: An overview and utilization in selected hospitals. *Research Journal of Pharmacy and Technology*. 2022;4382–8. doi:10.52711/0974-360x.2022.00735
- Naik JG, Dharmagadda S, Ligade VS, Nagaraju SP, Kulkarni M. Enrolment, utilisation, and best practices followed by hemodialysis patients concerning government and private health insurance schemes in Tertiary Care Hospital. *Clinical Epidemiology and Global Health*. 2023;24:101412. doi:10.1016/j.cegh.2023.101412
- National Family Health Surveys (NFHS-5) government of India Ministry of health and family welfare Available from: [NFHS-5_Phase-II_0.pdf](https://www.nfhs.gov.in/nfhs-5-phase-ii-0.pdf) (mohfw.gov.in)
- Peritoneal Dialysis –first initiative in India: a cost-effectiveness analysis, 2021. Gupta D, Jyani G, Ramachandran R, Bahuguna P, Ameel M, Dahiya B et al. *Peritoneal dialysis – first initiative in India: a cost-effectiveness analysis. Clinical Kidney Journal*. 2021;15(1):128-135.
- Pradhan Mantri National Dialysis Program | National Health Systems Resource Centre (nhsrindia.org) Dialysis Program under the National Health Mission [Internet]. 2016 [cited 23 July 2022]. Available from: <https://main.mohfw.gov.in/pradhan-mantri-national-dialysis-programme-under-nhm>
- Pradhan Mantri National Dialysis Programme guidelines for establishing peritoneal dialysis services [Internet]. 2016 [cited 25 July 2022]. Available from: https://nhm.gov.in/New_Updates_2018/PMNDP/Guidelines_for_PMNDP.pdf
- Pradhan Mantri National Dialysis Programme under NHM. Dialysis Program under the National Health Mission [Internet]. 2016 [cited 23 July 2022]. Available from: <https://main.mohfw.gov.in/pradhan-mantri-national-dialysis-programme-under-nhm>
- Providing Dialysis in India: Many pieces in the puzzle, 2019. Jha V. *Providing Dialysis in India: Many pieces in the puzzle. The National Medical Journal of India*. 2019;32(6):321.
- Rashtriya Swasthya Bima Yojna National Portal of India Available from: <https://www.india.gov.in/spotlight/rashtriya-swasthya-bima-yojana>
- StatPearls [Internet]. [cited 2023 Dec 19]. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK535404/>
- Teresa K. Chen, MD, MHS, Daphne H. Knically, MD, and Morgan E. Grams *Chronic Kidney Disease Diagnosis and Management* [Internet] Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7015670/>
- Wilson S, Mone P, Jankauskas SS, Gambardella J, Santulli G. Chronic kidney disease: Definition, updated epidemiology, staging, and mechanisms of increased cardiovascular risk [Internet]. U.S. National Library of Medicine; 2021 [cited 2023 Dec 20]. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8035205/>
- Wouters OJ, O'Donoghue DJ, Ritchie J, Kanavos PG, Narva AS. Early chronic kidney disease: Diagnosis, management and models of care. *Nature Reviews Nephrology*. 2015;11(8):491–502. doi:10.1038/nrneph.2015.85