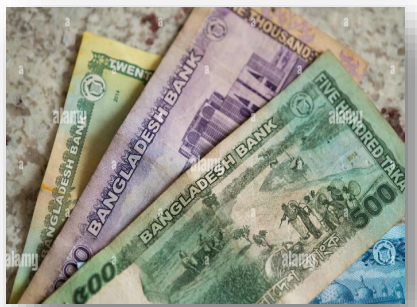
Out-of-pocket cost of kidney dialysis in Bangladesh


Presented by
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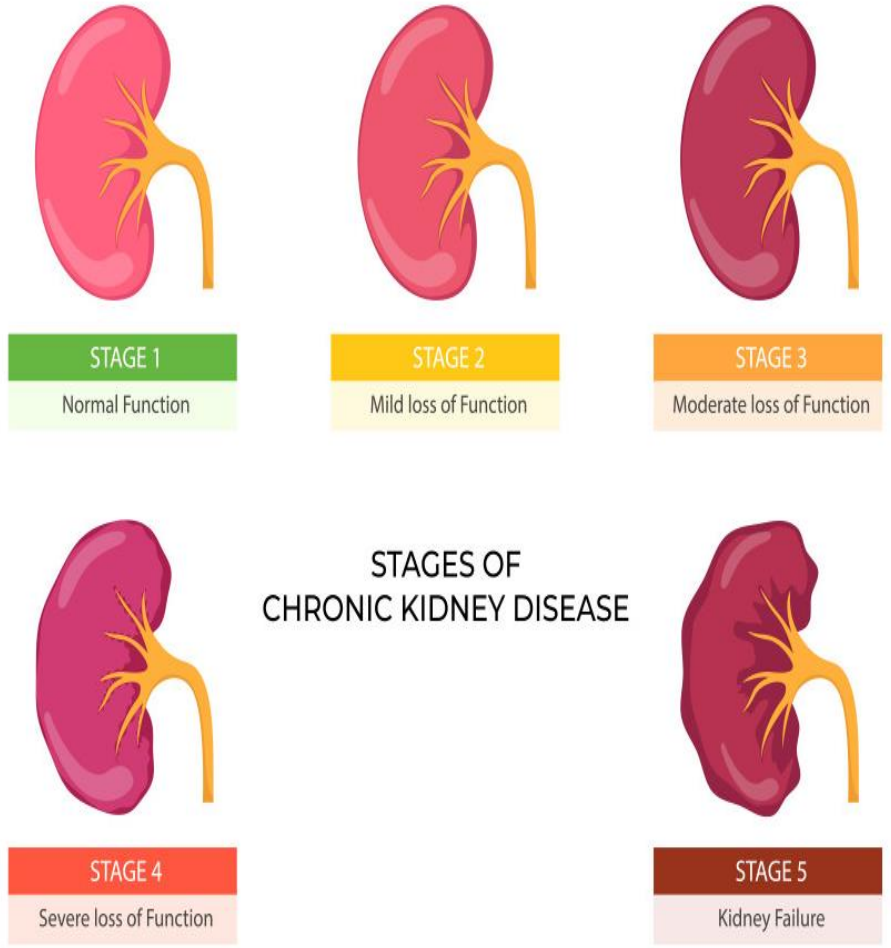
Chronic Kidney Disease (CKD)

একবার ক্রনিক কিডনি ডিজিজে আক্রান্ত হলে ভুগতে হয় গোটা জীবন

- Chronic kidney disease (CKD) means your kidneys slowly get damaged and can't remove waste and keeping blood pressure normal.
- CKD is a major cause of disability and death globally (700 million cases in 2017) (Bikbov et al., 2020).
- Chronic kidney disease is more prevalent in older individuals and in people experiencing diabetes mellitus , hypertension and acute kidney injuries (Kovesdy, 2022).



CKD: Consequences

- Dialysis and kidney transplantation are the possible ways to keep alive the patients in case of kidney failure or function at only 10%-15% of their normal capacity
- Dialysis removes extra fluid and waste products from blood when the kidneys are not able to
- কিডনি ডায়ালাইসিস হচ্ছে একটি প্রসেস বা প্রক্রিয়া
- মানুষের শরীরে যখন কিডনি কাজ করে না, তখন অনেক ধরনের বর্জ্য পদার্থ জমে যায়। সেজন্য কিডনির বিকল্প হিসেবে বর্জ্যগুলো পরিশোধিত করার যে প্রক্রিয়া, সেটিকে ডায়ালাইসিস বলা হয়
- অর্থাৎ কিডনির বিকল্প হচ্ছে ডায়ালাইসিস

Dialysis: Overview

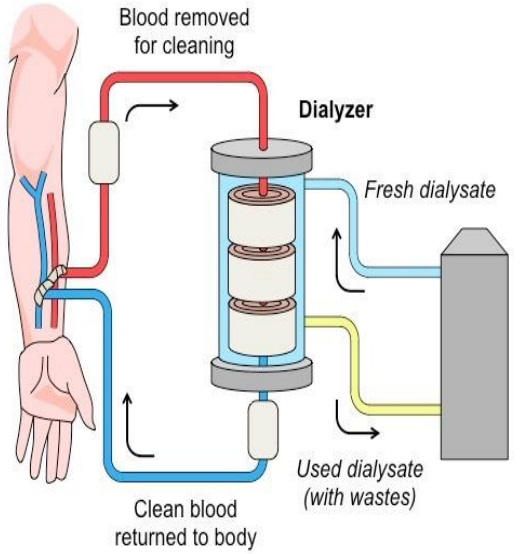
- There are two types of dialysis,

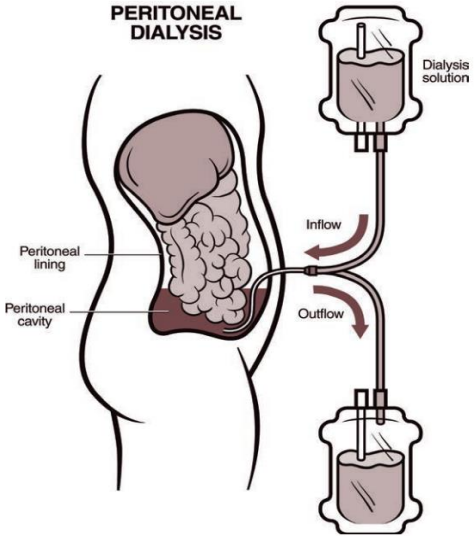
    1. Hemodialysis, and
    2. Peritoneal dialysis

  Hemodialysis, the most common form of dialysis

- Hemodialysis has conventionally been delivered in three treatment sessions per week with 3-4 hours per session.

- There is another type of dialysis called peritoneal dialysis (PD) which is done by filling the peritoneum in the abdomen with dialysate and using the peritoneal membrane as a semipermeable membrane.

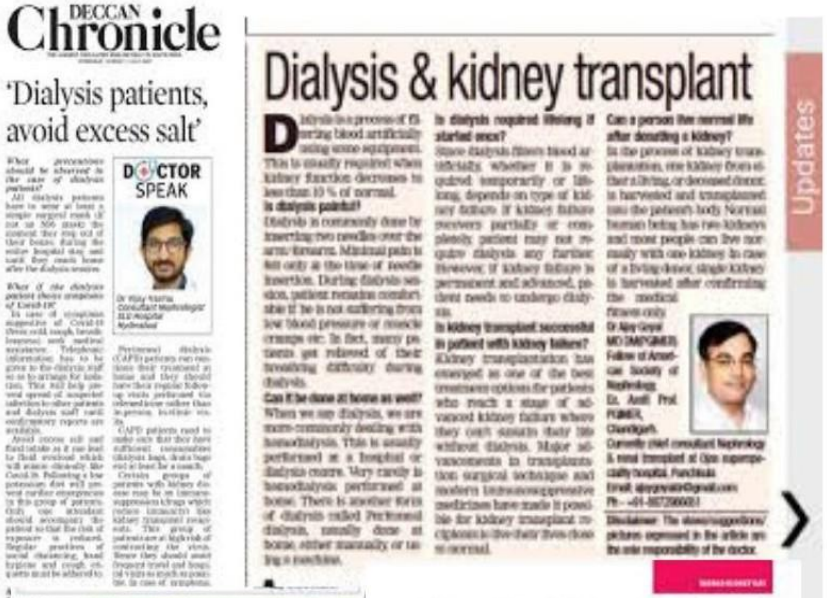


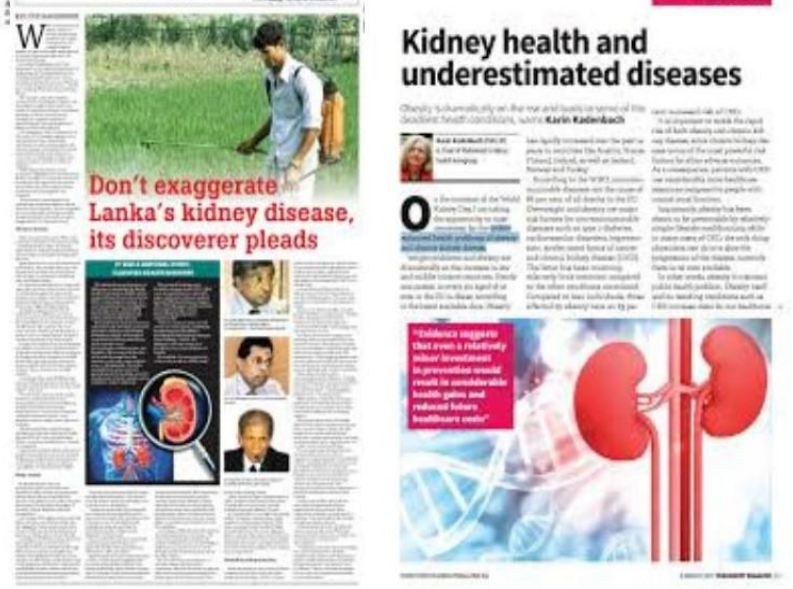


Dialysis: Financial Perspective

- CKD can have adverse consequences for the living conditions of individuals and their families, including severe financial problems along with potential loss of employment of those requiring dialysis (Essue et al., 2013, Higashiyama et al., 2009; Muehrer et al., 2011).
- In the South Asian, only *30% of the total patients* with kidney failure can afford dialysis (Divyaveer et al., 2021).
- In low-and middle-income countries (LMICs), the financial cost of dialysis is around **US$ 3,424 to US$ 42,785 per year** for hemodialysis and US$ 7, 974 to US$ 47, 971 for peritoneal dialysis (Hosen et al., 2020).
- The average cost of per Dialysis **in India is INR Rs.2,356 to Rs.5,000** (Krish et ql 2034)
- The annual cost of **hemodialysis** ranged from **Int$ 5,869–8,804 in Sri Lanka** (Mushi et al 2015)
- The cost of dialysis in **Pakistan was Int$ 4,668** (Mushi et al 2015)
- In China alone, they spent **US$ 50 billion on hemodialysis** (Yang F, et al., 2021)
- In Bangladesh, **around 0.8 million kidney failure patients** require dialysis, but **only 30,000 are able to receive it** due to lack of availability and financial capability (Nawaz Farhin, 2017)
- There is a **lack of research (no research!)** focusing on the financial burden of kidney dialysis in Bangladesh

News Coverage on Kidney Disease





Objectives of this study

The overall objective of this study is to estimate the **health and financial burden** of kidney dialysis patients in Bangladesh. The specific objectives of the study are:

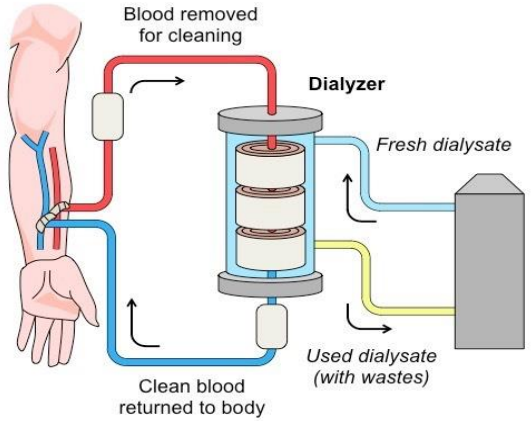
1. To assess the **out-of-pocket (OOP)** cost of kidney dialysis from households' perspective
2. To assess the **catastrophic health care expenditure** and **financial distress** of kidney dialysis among Bangladeshi households
3. To assess the **health-related quality of life** of patients using EQ-5D-5L

Study Design and sample size

- This is a **cross-sectional hospital-based** study
- The kidney dialysis patients who are **confirmed by a registered physician** were target sample for this study
- This study was conducted in various health facilities including **public, private and NGOs hospitals** in Bangladesh.
- A total of 477 hospitalized patients was recruited
- Face to face interviews were conducted
- Study period November 01- December, 31

Cost Estimation

- Cost analysis was performed following the **WHO guideline** for estimating the economic burden of non-communicable disease (WHO, 2005)
- A bottom-up **micro-costing approach was** used to generate the average annual OOP cost per patient (Drummond et al., 2005)
- **Out-of-pocket (OOP)** costs are defined as expenditures during treatment by households consisting of direct medical costs and direct non-medical costs
- **Direct medical expenses** include those costs that were consumed for healthcare resources during dialysis treatment (e.g., medicine, diagnosis, dialysis fee, physician fee)
- The **direct non-medical cost** includes the cost of transportation, lodging, food items, informal payment, etc.
- The **household cost burden** was measured by the percentage of total household earnings consumed by the course of treatment (Grietens et al., 2008)
- The **generalized linear model (GLM)** with a log link and γ distribution to assess the associations between the explanatory variables and OOP cost.


Blood removed
for cleaning
Dialyzer
Fresh dialysate
Used dialysate
(with wastes)
Clean blood
returned to body

RESULTS


BANGLADESH BANK
BANGLADESH BANK
BANGLADESH BANK
FIVE HUNDRED TAKA
500

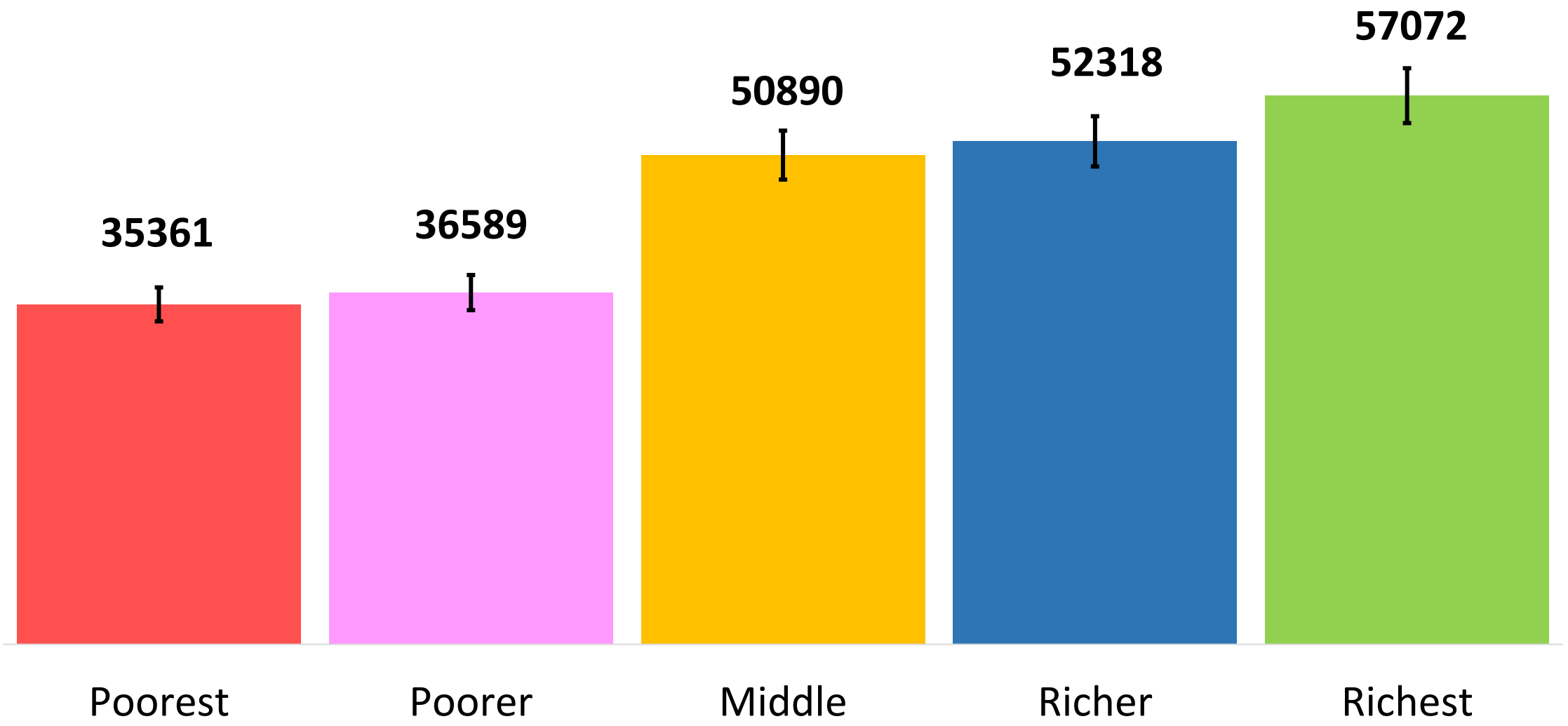
Monthly Out-of-pocket (OOP) cost of dialysis (only who incurred cost in specifics)

Cost types	Cost components	Mean	SD	Median	Minimum	Maximum	5th Percentile	95th Percentile
Direct medical	Dialysis fee (n=472)	**16555**	12051	**13200**	**458**	**78000**	**4280**	**36000**
	Consultation fee (n=350)	1522	3793	800	10	60000	100	5000
	Medicine Cost (n=472)	10729	8908	8000	300	56400	2000	28000
	Diagnostic Cost (n=418)	5301	7602	3000	120	60000	500	20000
	Bed fee (n=28)	19662	32109	8920	200	150000	400	100000
	Medical Equipment Cost (n=106)	8432	7572	6550	180	56800	720	20000
	Other direct cost (n=85)	4431	7518	2500	200	50000	600	11200
	Total direct medical cost (n=477)	**36578**	25142	**29200**	**4280**	**202800**	**11183**	**87000**
Direct non-medical	Transportation Cost (n=455)	4152	4645	3000	80	42000	480	12000
	Food cost (n=383)	1582	2254	1200	50	25000	200	4000
	Informal payment (n=61)	449	704	200	40	4000	50	1600
	Caregiver expenditure (152)	1679	1849	1200	50	10000	200	7080
	Accommodation cost (n=53)	14120	13510	12000	70	81000	500	30000
	Other cost (n= 294)	395	630	300	10	6000	50	900
	Total direct non-medical cost	**7871**	8669	**5200**	**0**	**92600**	**1120**	**24200**
	Total spending in aboard (n=29)	**32514**	24770	**25000**	**7500**	**125000**	**8333**	**76667**
Total OOP cost (n=477)		**46,426**	31855	**36300**	**6690**	**210,000**	**14600**	**113567**

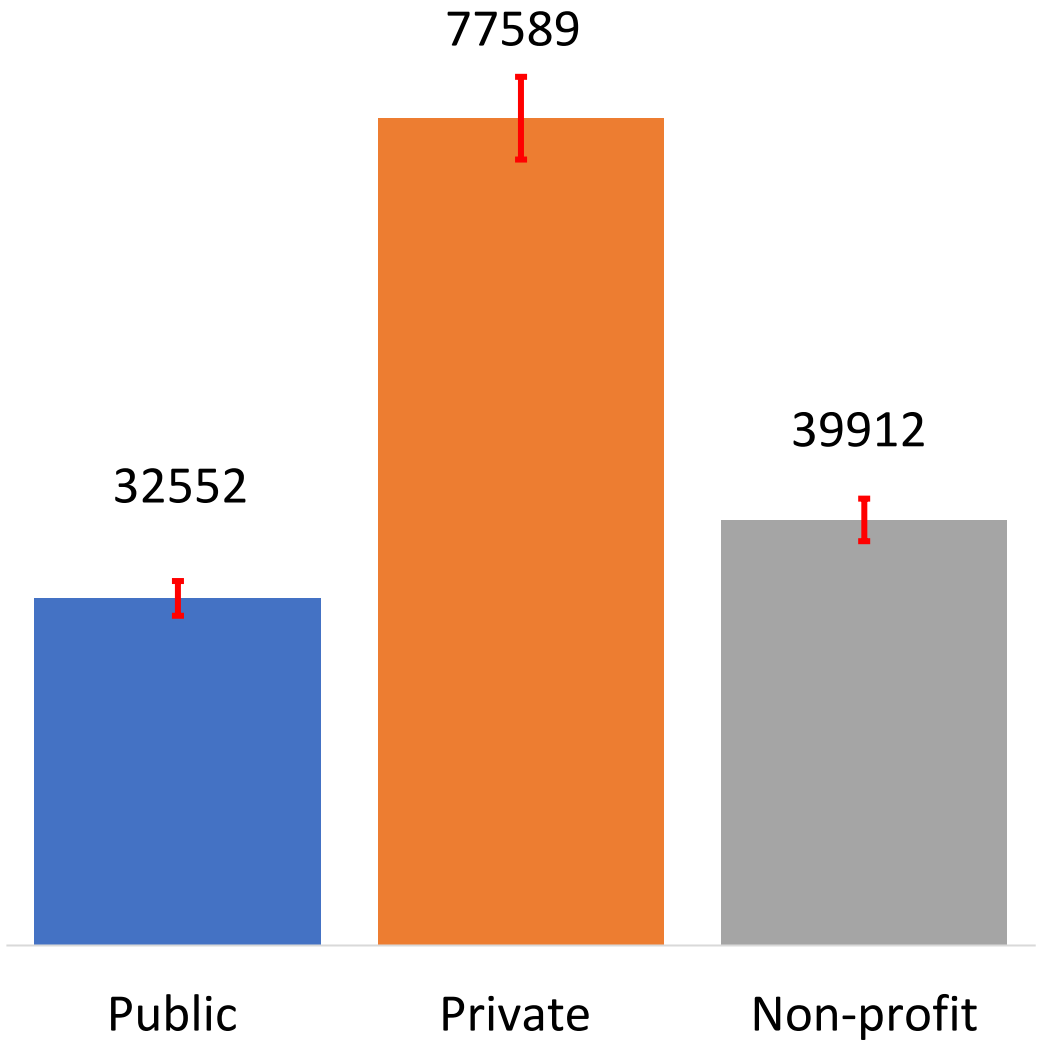
Share of cost components to the total OOP cost

Type of cost	Cost components	% of total direct cost
Direct medical	**Dialysis fee**	**35.28**
	Consultation fee	2.41
	Medicine Cost	**22.87**
	Diagnostic Cost	**10.01**
	Bed fee	2.49
	Medical Equipment Cost	4.04
	Other direct cost	1.70
	Total direct medical cost	**78.79**
Direct Non-Medical	Transportaion Cost	8.53
	Food cost	2.74
	Informal payment	0.12
	Caregiver expenditure	1.15
	Accommodation cost	3.38
	Other cost	0.52
	Total Direct non-medical cost	**16.95**
	Total spending in aboard	4.26
	Total direct cost	100.00

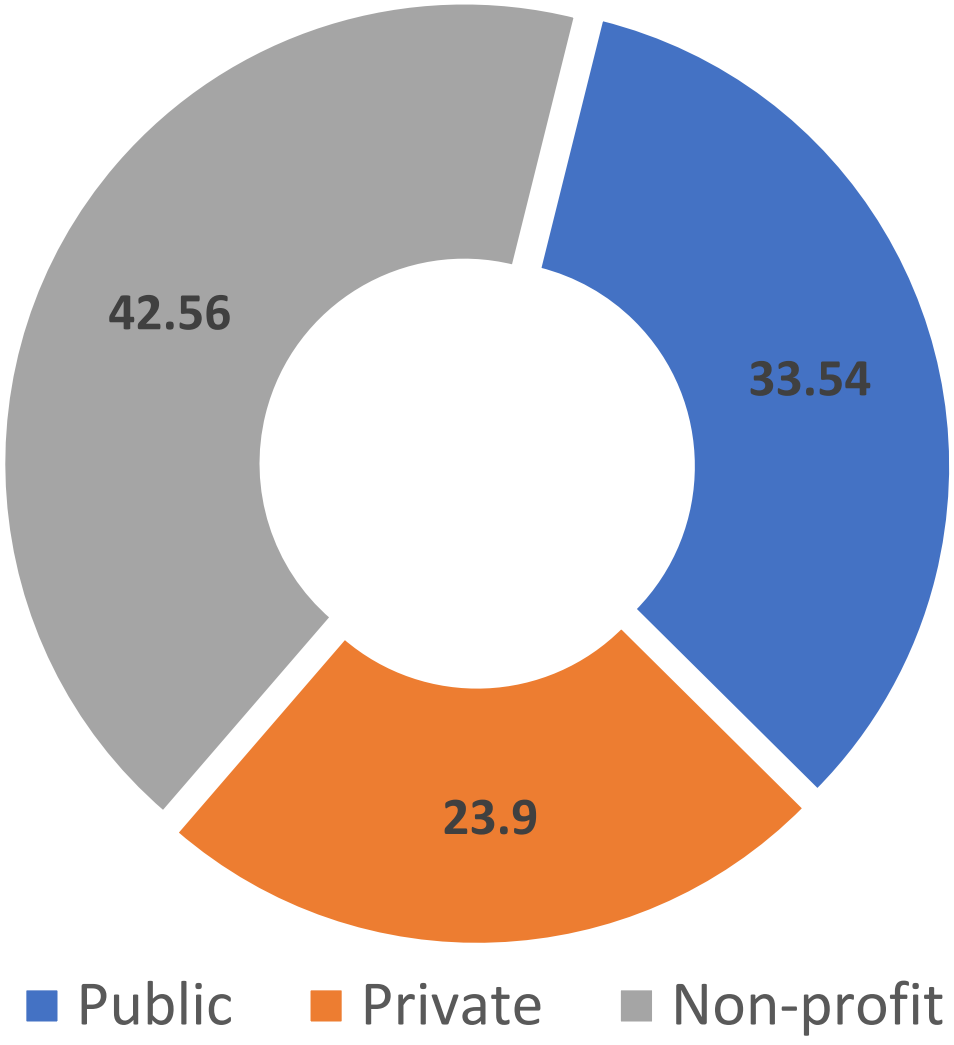
Monthly OOP cost of dialysis across wealth quintiles

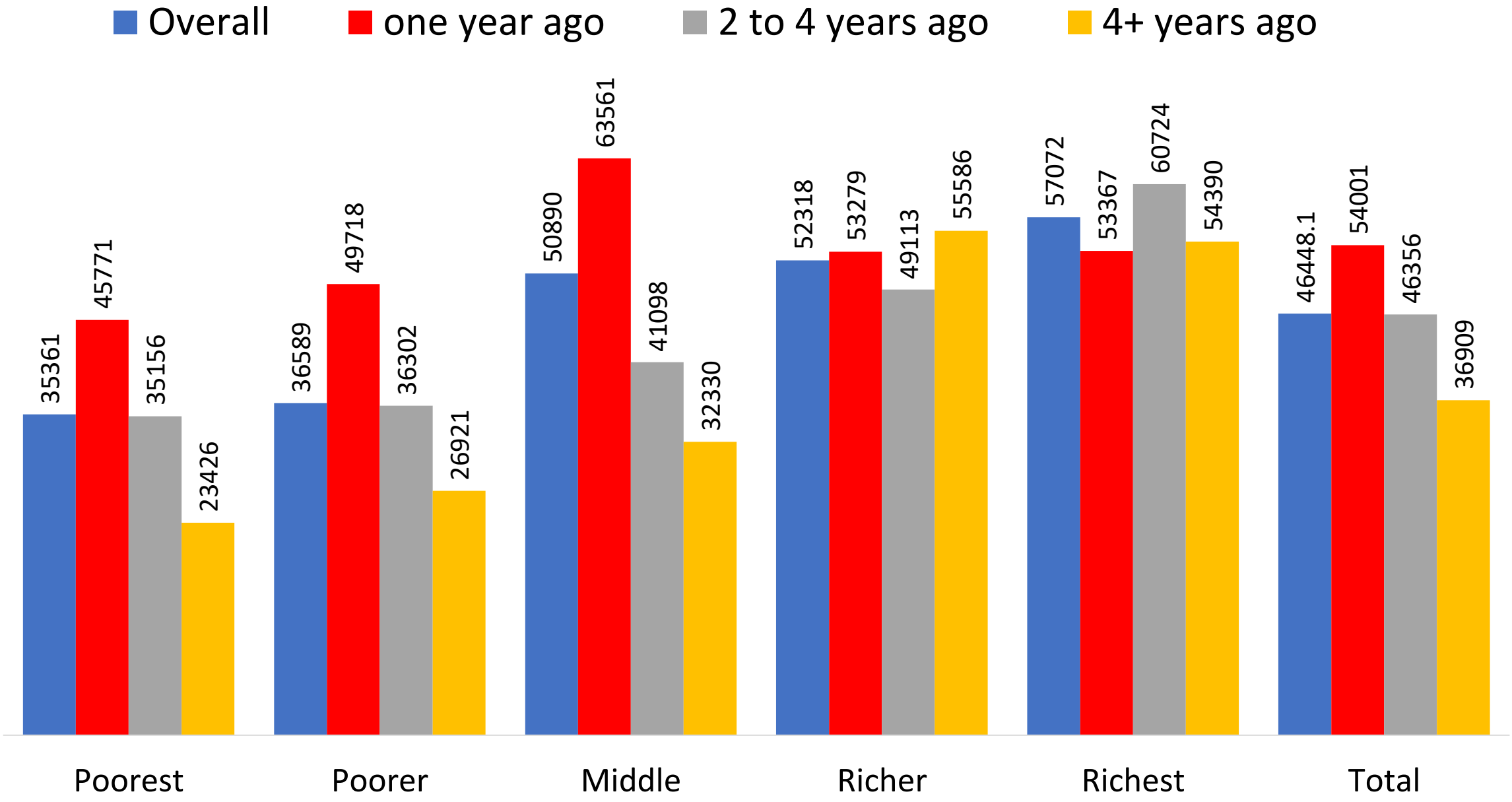


Average OOP cost/month

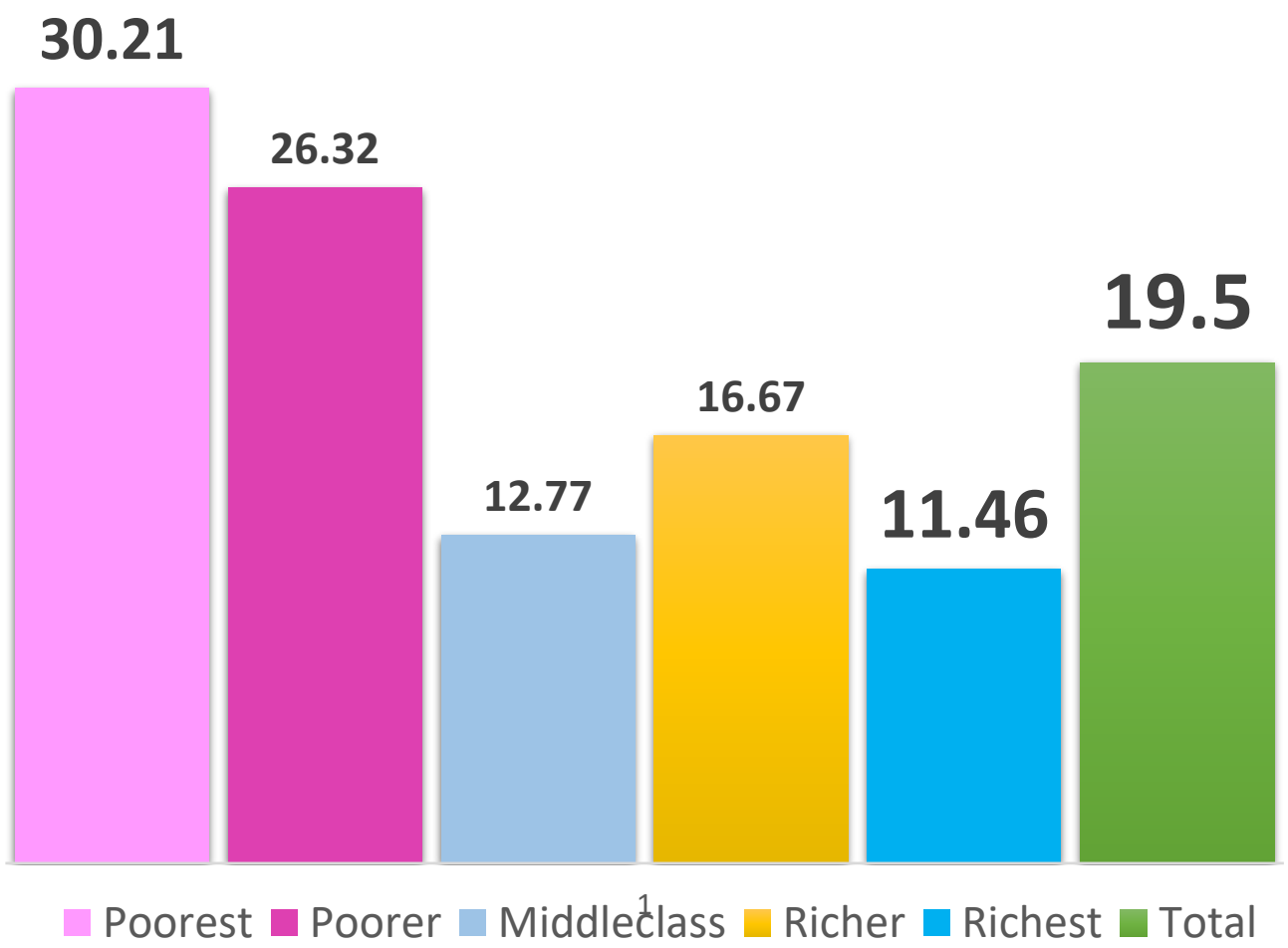


Dialysis received from hospital (%)

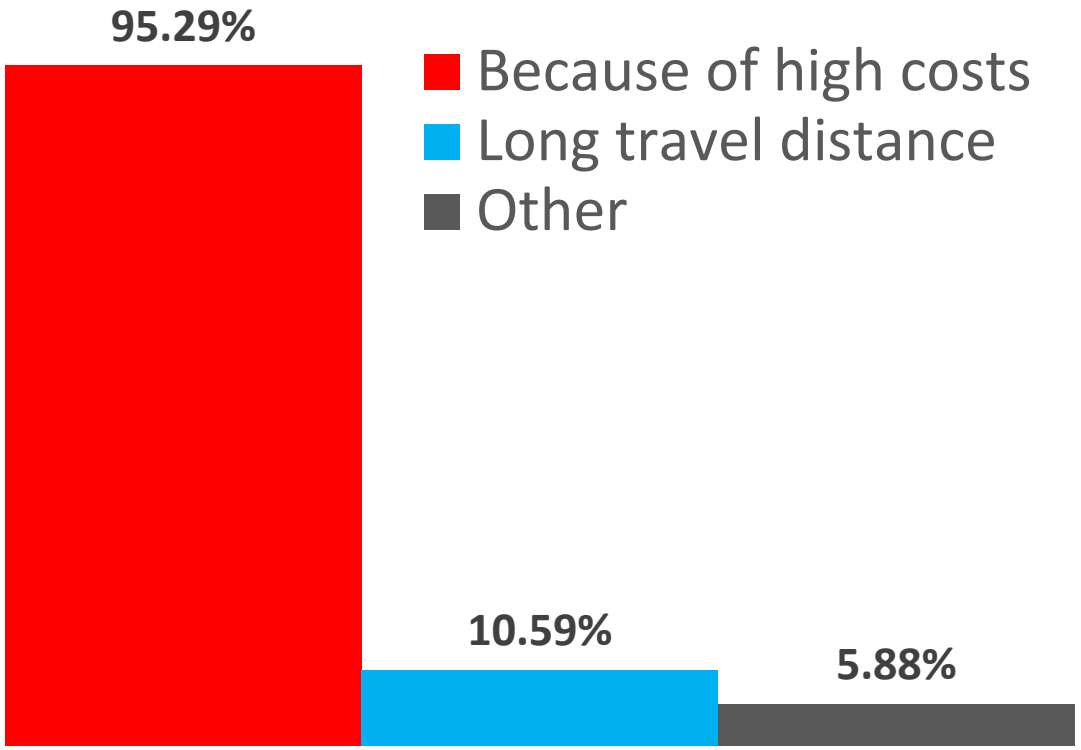



Overall
one year ago
2 to 4 years ago
4+ years ago
35361
45771
35156
23426
36589
49718
36302
26921
50890
63561
41098
32330
52318
53279
49113
55586
57072
53367
60724
54390
46448.1
54001
46356
36909
Poorest
Poorer
Middle
Richer
Richest
Total

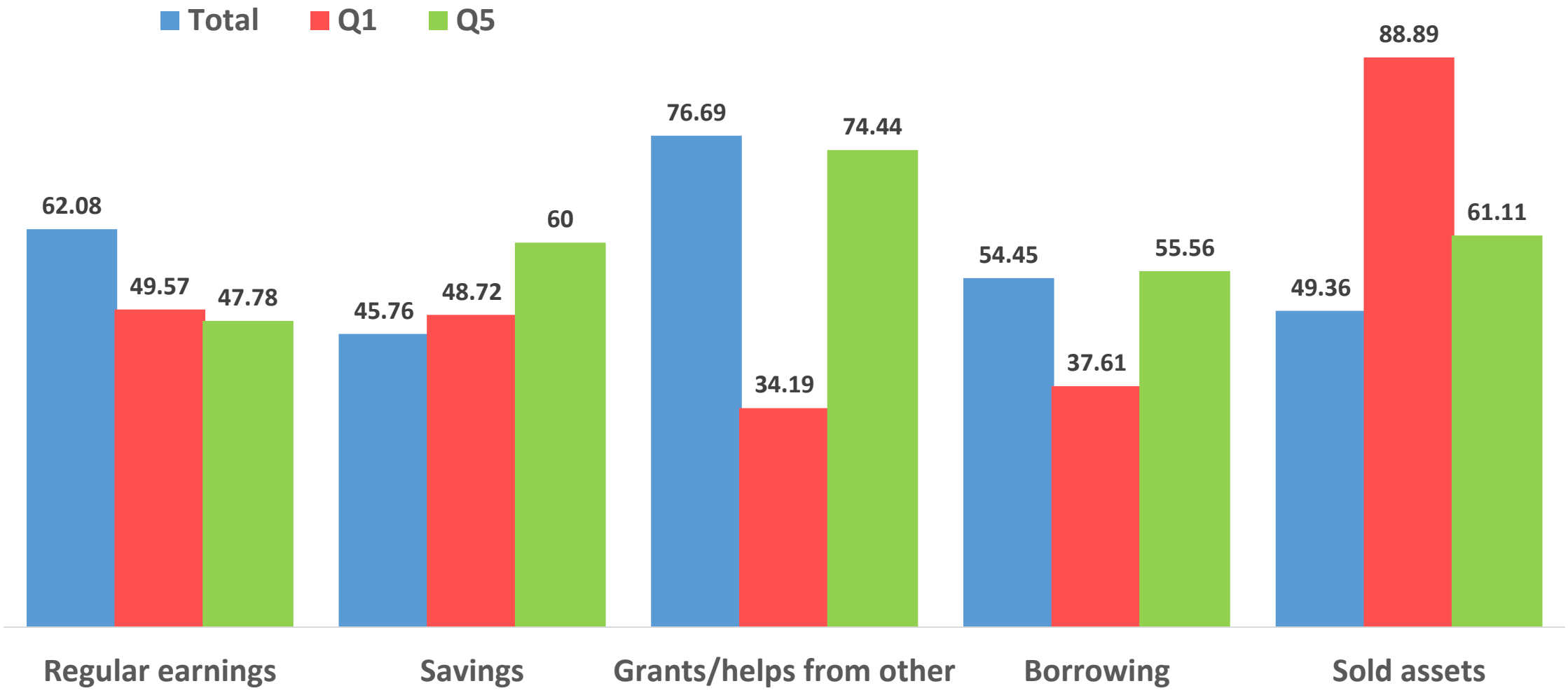
Less utilization of recommended dialysis across wealth quintiles (%)



Reasons for receiving less dialysis

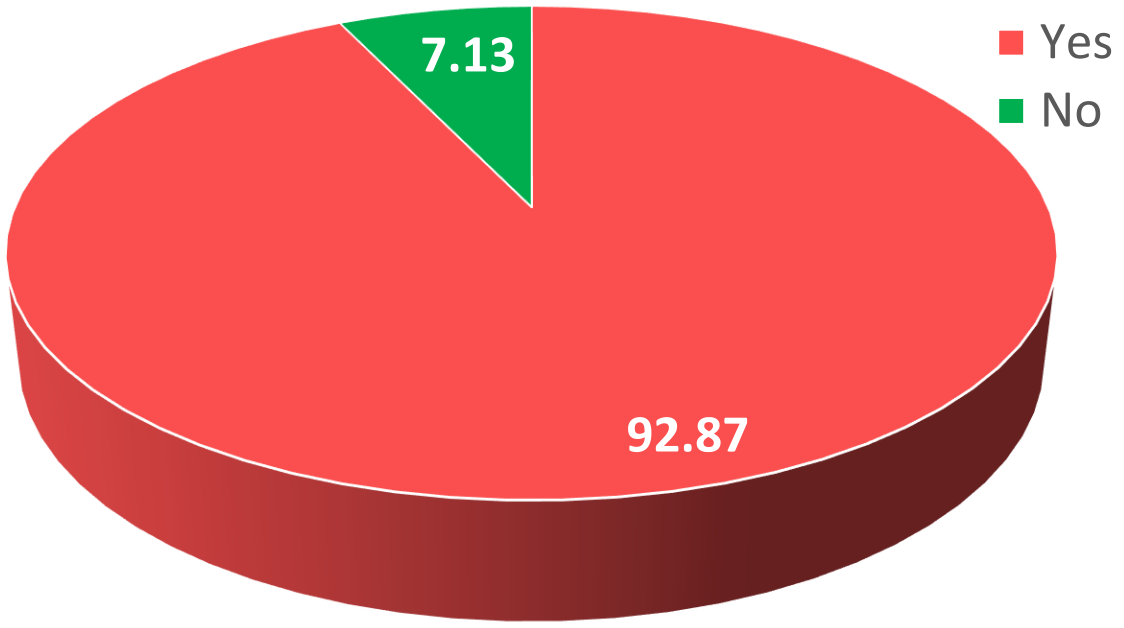


Coping mechanism for cancer treatment, % (multiple response)



Distress financing due to dialysis treatment

Wealth Quintiles	Distressed	Not distressed
Poorest	94.79	5.21
Poorer	96.84	3.16
Middle	96.81	3.19
Richer	94.79	5.21
Richest	81.25	18.75
Total	**92.87**	**7.13**



Catastrophic Health Expenditure (CHE)

Wealth index	Catastrophic Health Expenditure (CHE) Thresholds	
	OOP as 25% of total income	**OOP as 40% of total non-food expenditure**
Poorest	92.71	95.83
Poorer	89.47	92.63
Middle	92.55	91.49
Richer	84.38	86.46
Richest	84.38	83.33
Overall	**88.68**	**89.94**

Findings from In-depth Interviews

- Answering the questions about the treatment and healthcare services of kidney dialysis one respondent said that *"kidney failure is always accompanied with diabetes and high-blood pressure, which have their own treatments and associated cost which are often unaffordable*"
- Another respondent reported that *"I need monthly health and mental-health counselling that are immensely costly to keep up with, and only the wealthy can afford such healthcare."*
- One respondent answered, though he was now using the public facilities, taking this costly treatment for ***9 years have depleted all their assets and savings***. Now he has to ***depend on his relatives for financial assistance***, to keep taking kidney dialysis

Findings from In-depth Interviews (Contd.)

- One respondent who lives in her in-laws house had to place her entire treatment cost burden on her parents. Her husband said *he was scammed by an agency that promised him that they could arrange a kidney transplant for her through illegal means.* Hoping to get rid of the cost of routine dialysis her parents arranged money by selling her share of the inheritance, half of which was deposited to the scammers and the rest was said to be delivered after getting service. ***Her family lost about BDT 10 lacs worth of money in this scam*** and now they are scrambling to afford for her regular treatment.
- One respondent said that it's been 5 years since he has been taking kidney dialysis which was draining his family finances and the future of this two (02) young children as he was the sole income earner. Desperate to get an easy way out of this chronic illness he also got ***scammed of BDT 4 lacs by an agency who promised to arrange a kidney for him*** so facilitate kidney transplant in India. Hoping for better treatment in India he got into this kidney transplant scam, as their was no legal way to buy kidney there as he was told. Instead, the doctors suggested him to continue the everlasting kidney dialysis procedure he tried to escape.

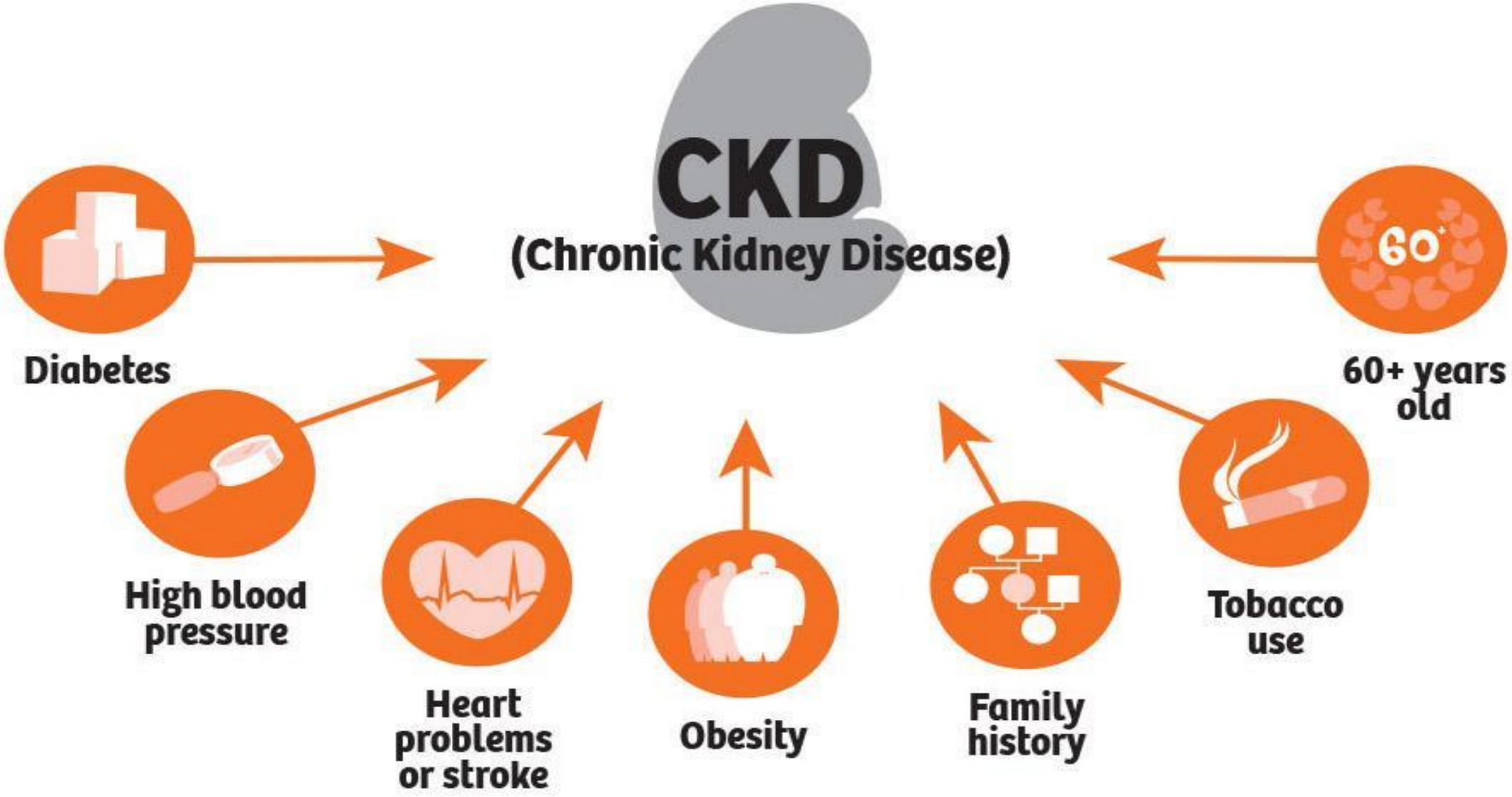
Conclusions

- The average monthly OOP cost of dialysis was BDT **46426 (Min BDT 6690 – Max BDT 210,000)**
- **The annual OOP of dialysis was about BDT 80,280 to BDT 25,20,000**
- Total direct medical related cost was 78.79% of the total costs
- Dialysis fee (35.3%) and medicine (23%) costs accounting for the highest share of the cost of dialysis
- **92.87% household** faced distress financing to receive dialysis treatment in Bangladesh, while **OOPE is greater for richest** households, the cost burden is greater for poorer households.
- Around **90%** of the households faced catastrophic health expenditure (CHE) to finance the dialysis treatment.
- 19.5% of the patients receiving less dialysis than the recommended number, while share of taking less dialysis was highest (30.21%) among poorest households. High cost of dialysis (95.29%) was responsible for receiving less dialysis.
- The health- related quality of life of patient was 0.30 out of 1.00 (full health)

Conclusions

- District level government hospitals should include dialysis facility and provide affordable diagnostic facilities.
- Dialysis facilities in private hospitals should be subsidized so that resource-poor household can also access the service. Thus, it would ensure equity in receiving dialysis.
- Kidney patients requiring dialysis should be included in a safety net program so that financing the treatment would be easier. The government can invest **an additional budget to safeguard patients** from financial catastrophic shock
- More **expensive treatment drugs** should be produced by state-owned pharmaceuticals to reduce their cost
- Dialysis treatment should be brought **under an insurance mechanism** to make it more affordable.

Risk Factors of CKD



Thank You

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