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International Remittances and Private Healthcare in Kerala, India

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Abstract

The inflow of international remittances to Kerala has been increasing over the last three decades. It has increased the income of recipient households and enabled them to spend more on human capital investment. Using data from the Kerala Migration Survey-2010, this study analyses the impact of remittance receipts on the households' healthcare expenditure and access to private healthcare in Kerala. This study employs an instrumental variable approach to account for the endogeneity of remittances receipts. The empirical results show that remittance income has a positive and significant impact on households' healthcare expenditure and access to private healthcare services. After disaggregating the sample into different heterogeneous groups, this study found that remittances have a greater effect on lower-income households and Other Backward Class (OBC) households but not Scheduled Caste (SC) and Scheduled Tribe (ST) households, which remain excluded from reaping the benefit of international migration and remittances.

Keywords: *International migration; remittances; healthcare expenditure; health care access.*

Introduction

The world has witnessed enormous progress in improving health and longevity in recent decades. However, rising out-of-pocket health expenditure poses a significant challenge for many countries. The World Health Report 2015 highlighted that every year, 150 million people around the world suffer financial catastrophe due to out-of-pocket expenditure on healthcare services, and 100 million are pushed into poverty as a result of this problem. Inadequate social security programmes and institutionalised care, especially in developing countries, push families to resort to various strategies to finance health expenditure, such as formal and informal borrowing, use of past savings or sale of household assets (Gertler, Levine, & Moretti, 2009; Islam & Maitra, 2012). International remittances are considered to be one of the important external income sources for households to meet unexpected health shocks and to escape from poverty. The New Economics of Labour Migration argues that remittances reduce a household's financial constraints that limit production and investment activities in an imperfect credit market environment and enable them to invest more in human capital and physical capital (Stark & Bloom, 1985; Taylor, 1999). In this way, remittances provide an insurance mechanism for the migrant family staying behind.

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This study examines the impact of remittance receipt on households' healthcare expenditure in Kerala. In 2011, the state received INR497 billion as remittances, which accounted for 31.2 per cent of the gross state domestic product (GSDP). Kerala's experience is comparable to that of major remittance dependant economies such as Tajikistan, Kyrgyz Republic and Nepal (World Bank, 2016; Zachariah & Rajan, 2011). Kerala sends 2.2 million emigrants abroad, with the majority migrating to the Gulf countries. Emigrants comprised 10 per cent and 17 per cent of the total labour force in Kerala in 2004 and 2011, respectively (Khan & Valatheeswaran, 2016). Furthermore, the proportion of households receiving remittances in Kerala increased from 12.2 per cent in 1993 to 16.3 per cent in 2007-08 (Tumbe, 2011). This indicates that, over the years, remittances have been an important income source not only for the economy but also for remittance-receiving households.

Kerala's performance in human development indicators is far ahead that of the other states in India, despite its slow economic growth and low per capita income. The state has succeeded in significantly reducing mortality and fertility rates and in improving the health status of its population (Bhat & Rajan, 1990). This success can be mainly attributed to the effective use of healthcare services, higher literacy (especially women's education), political awareness, the achievement of the minimum level of nutrition through the public distribution system, social movements, and development of road networks and transportation (George & Nair, 2004; Nag, 1989).

The state government has been able to reduce the prevalence of communicable diseases drastically by implementing various immunisation programmes and expansion of healthcare facilities, though the prevalence of non-communicable diseases has been rising in recent decades (Kutty, 2000; Thresia & Mohindra, 2011). Though Kerala has achieved a higher human development index, the state has the highest percentage of morbidity in India, and it has been increasing since the last two decades both in the rural and urban areas (NSSO, 1998, 2015).

The morbidity rate in rural areas increased from 118 persons to 310 persons per 1,000 population during the period 1995-96 to 2014. In urban areas, it increased from 88 persons to 306 persons per 1,000 people during the same period. In 2007, nearly 6.26 million persons had suffered from one health problem. Of this, 4.48 million persons suffered from one or more of the eight chronic conditions, viz., diabetes, heart disease, arthritis, cholesterol, blood pressure, asthma, cancer and kidney disease. Another 1.78 million people had some other chronic illness (Zachariah & Rajan, 2007).

The rapid change in the disease pattern in the state poses an economic burden for households because non-communicable diseases account for higher out-of-pocket expenditure. The state government failed to increase investment in the health sector due to the rising fiscal deficit in the budget during the last two decades. Spending on healthcare increased slightly from 1.02 per cent of the Gross State Domestic Product (GSDP) to 1.5 per cent between 2001–02 and 2013-14 (Government of Kerala, 2015). The lack of public spending on health led to the deterioration in the quality of healthcare services in government hospitals. As a result, the government hospitals were unable to meet the increased demand for healthcare services and the public responded to this shortfall by relying more on private healthcare services (Dilip, 2010; Levesque, Haddad and Narayana, 2006). In 2014, more than 65 per cent of the spells of ailments were treated in the private healthcare sector in Kerala, which is almost two times higher than that treated in the public sector (NSSO, 2015). The higher utilisation of private healthcare services increased households' health expenditure, pushing families into impoverishment. In 2005, out-of-pocket healthcare expenditure

was one of the main reasons for impoverishment in India and Kerala ranked the highest in terms of both out-of-pocket expenditure and impoverishment due to healthcare expenditure (Garg & Karan, 2009; Ladusingh & Pandey, 2013). In 2013-14, Kerala spent 6.5 per cent of its gross state domestic product (GSDP) on health, out of which public expenditure constituted 1.5 per cent of the GSDP and rest was private expenditures.

Though Kerala has comparatively higher levels of remittances along with a higher rate of morbidity across Indian states, research on the responsiveness of healthcare expenditure to remittance receipts has not received much attention from researchers in India. This study examines the impact of remittance receipts on households' healthcare expenditure and access to private healthcare in Kerala.

This study used cross-sectional household survey data from the Kerala Migration Survey (KMS) – 2010 and employs the Instrumental Variable (IV) approach to address the endogeneity of international migration and remittances. Following the literature in the field, this study used migration networks as an instrument to analyse migration and remittances. Using the robust IV estimates, we found that the remittances have a significant and positive effect on healthcare expenditure. Remittances increase the likelihood of access to private health care services with respect to public health care to ensure the quality of care. The cost of healthcare services is high in private hospitals, which poses a higher burden on households. Remittances reduce the burden and allow families to access quality healthcare facilities in private hospitals. The empirical results vary when different socio-economic groups disaggregate the sample. Receipt of remittances allows lower-income groups to access private hospitals, but this does not apply to the socially disadvantaged SC/ST communities in Kerala.

The rest of the article is organised as follows. The second section discusses the theoretical and empirical literature on migration, remittances and healthcare. The third section explains the data and descriptive statistics of the study. The fourth section presents the empirical specification of the model, and the fifth section reports the empirical results. The sixth section presents the conclusion of the study.

Literature review

International migration may affect health outcomes in different ways. On the one hand, migration is considered as a household strategy of decreasing vulnerability to negative shocks through diversifying household income (Stark & Bloom, 1985; Taylor, 1999). On the other hand, when parents migrate, left-behind children may experience psychological distress because caretakers fail to provide care or emotional support (Mazzucato et al., 2015). Parental migration can cause conduct problems among children due to lack of supervision. Migration can affect marital stability and lead to divorce, which, in turn, will affect children's well-being (Mincer, 1978). Also, the families may face income constraints in the short-run due to the absence of a working member due to migration, and this may force them to take loans to meet health-related shocks. Medical debt can create large and long-term financial burdens for families.

Migration can bring better healthcare information which helps left behind family members improve health and care practices. Remittances, the money sent back home by migrants, can relax households' budget constraints and allow them to invest more resources in health.

Remittances also enable households to access private healthcare services which are believed to be better (Drabo & Ebeke, 2010). Though healthcare costs are high in private hospitals,

remittances can ease the financial burden and enable households to access private healthcare services. Moreover, remittances have the potential to raise the household's nutritional status, which improves health outcomes in general (Antón, 2010; Azzarri & Zezza, 2011).

The existing studies report both positive and negative impacts of international migration on health expenditure and outcomes. A few studies found that international migration has negative consequences on the health of left-behind family members. Using the proportion of migrants at the community level as the instrument for presence of migration in the families in Romania, Botezat & Pfeiffer (2014) found that children living in the migrant families are most likely to get sick or depressed as compared to children in non-migrant households, particularly in rural areas. Mazzucato et al. (2015) reported that children's psychological well-being is affected when mothers migrate and live with their fathers in Angola and Nigeria. This is because fathers are unable to provide emotional support to their children. Using survey data from Thailand, Graham & Jordan, (2011) reported that children of migrant fathers in the care of their mothers are most likely to suffer conduct disorders as compared to children living with both parents. Using panel data from rural China for the period of 1997-2006, de Brauw & Mu (2011) found that children living in migrant households are more likely to be underweight because adults in migrant household spend less time on food purchase and preparation. Also, these children are more likely to do household chores, work more hours and spend time preparing food. Sevoyan & Agadjanian (2010) used survey data of married women in rural Armenia to study the relationship between male out-migration and STDs among rural women who left behind. The study found that migration is associated with high risks of STDs among migrants and, by extension, increased the risks of STDs among migrant wives compare to women whose husband has not migrated. Agadjanian, Arnaldo, & Cau (2011), Corno & de Walque (2012) and Lurie (2006) also examined how male migration affects the risk of STDs and HIV/AIDS among non-migrating wives in sub-Saharan African countries. Their findings are similar to Sevoyan & Agadjanian (2010).

While the above-mentioned studies explored the negative impact of migration on health outcomes, several studies have found that migration increases household income via remittances inflows which have the potential to improve health outcomes of non-migrating family members. Using cross-sectional data from Ecuador and employing an instrumental variables approach to control for reverse causality and selection bias, Ponce, Olivié, & Onofa (2011) found that remittances have a positive and significant effect on health expenditure and also on preventative health care such as deworming and vaccination. The study showed that a US$ 10 increase in the amount of remittances increases health expenditure by five per cent. In addition, it also found that remittances help meet medical expenditure when household members suffer an illness. Therefore, remittances are used for both emergency situations and in preventative terms. Similarly, using nationally representative household survey data from Mexico, Amuedo-Dorantes & Pozo (2011) concluded that remittances raise household healthcare expenditure, with particularly larger effects among high income households and households lacking health insurance. At the same time, low-income households spend less of their remittance income on healthcare because they are covered by some kind of health insurance. Furthermore, healthcare expenditure shows greater responsiveness to increase in remittance income than to increase in other sources of household income. Ambrosius & Cuecuecha (2013) used nationally representative data from Mexico and concluded that remittance-receiving households are less prone to large levels of indebtedness when household members faced serious health problems as compared to non-remittance receiving households.

A related study by Hildebrandt & McKenzie (2005) employing an instrumental variables approach and focusing on the historical migration rates as the instrument for current migration found that migrant households have lower infant mortality rates and that children are less likely to be born underweight than those in non-migrant households in Rural-Mexico. The estimated results show that children born in migrant households are three per cent less likely to die in their first year and weigh 364 grams more than children born in non-migrant households. Another line of research examined the impact of remittances, foreign health aid and public spending on health outcomes of family members left behind. Using a cross-national dataset from 138 developing countries, Terrelonge (2014) found that remittances have a positive and significant effect on child and infant mortality, whereas government health expenditure has no effect on them. Results show that a one per cent increase in per capita remittance income reduced child and infant mortality by 0.10 per cent and 0.11 per cent, respectively. Besides, the author also found that remittances reduce malnutrition and depth of hunger.

Similarly, using a cross national dataset of 69 low- and middle-income countries, Zhunio, Vishwasrao, & Chiang (2012) found that remittance receipt is correlated with higher life expectancy and reduction in infant mortality rates. The empirical results show that a one per cent increase in real per capita remittance income resulted in a 0.03 per cent increase in life expectancy and a 0.15 per cent reduction in infant mortality. They also found that household expenditure through remittances is more effective than public spending on health outcomes. Using cross-national data from 56 developing countries and employing an instrumental variables approach to control for endogeneity of remittances, Drabo & Ebeke (2010) found that remittances lead to a sectorial shift in the use of healthcare services from the public to the private sector by middle- and upper-income families, while health aid and public spending are likely to increase access to public health services. Remittances and health aid reduce financial constraints and promote access to medical services. Azzarri & Zezza (2011) attempted to investigate how migration affects child health in Tajikistan. They found that children living in migrant households have a better height-for-age score than their counterparts. This indicates that remittances improve children nutritional status by increasing the kilocalorie consumption level.

Data and descriptive statistics

The data for this study was drawn from the Kerala Migration Survey (KMS-2010), carried out by the Migration Research Unit at the Centre for Development Studies in Thiruvananthapuram, Kerala. The sample households were selected through the stratified random sampling method. The total sample size is 65,000 individuals corresponding to 15,000 households. Out of the total sample, 12,990 persons had ailment during the last month prior to the survey.[3] Of this, 2575 persons (19.8 per cent) were members of remittance-receiving households and 10,415 persons (80.2 per cent) lived in non-remittance receiving households. International remittance-receiving households are defined as households that received remittances from abroad in cash and/or in-kind during the last one year from the date of the survey. This study excluded international migrant households that do not receive remittances and internal remittances receiving households so that the reference group consists only of those who do not experience any kind of migration and do not receive any kind of remittances. The survey collected detailed information on socio-economic characteristics of households, migrants abroad, amount of remittances received both in cash and kind, sources of remittances, and use of remittances, including basic consumption and capital investments,

[3] Out of this, 11,035 persons (85 per cent) consulted doctors, in which 61 per cent went to private hospitals.

children's education and household consumption expenditure. Especially relevant to this study, the survey asked questions about whether household members had any acute disease during the last one month, monthly per-capita healthcare expenditure (MPHE), and access to healthcare services. Further, it included information on ownership of durable household goods. Based on this, we constructed an asset index, which is a proxy for the wealth of the household, applying principle component analysis. In order to provide a clear understanding of the impact of remittances on healthcare expenditure, we divided the sample into two groups based on the accessibility of healthcare services in public and private hospitals. As a measure of access to healthcare services from the private sector by the household members, we use the variable *access to private healthcare services* which takes the value 'one' if household members received treatment from private clinics/hospitals during the last one month before the survey and 'zero' if they were treated in a government hospital.

Table 1. Descriptive statistics for the main variables

Variable	RRHs		Non-RRHs	
	Mean	S.D	Mean	S.D
Dependent variable				
Per capita health expenditure	504.14	768.91	411.95	547.36
Log of per capita health expenditure	5.99	0.55	5.85	0.46
Private hospital	0.75	0.43	0.57	0.50
Observations	2227		8952	
Explanatory variables				
Max. years of education of family members	12.17	2.91	11.83	3.15
Household member suffering from;				
No disease	0.77	0.42	0.79	0.40
Chronic disease	0.08	0.26	0.05	0.22
Acute disease	0.07	0.26	0.08	0.27
Both (acute and chronic diseases)	0.08	0.28	0.08	0.27
Number of dependents(number of household members aged below 12 years and above 65 years)	1.79	1.56	1.14	1.22
Wealth Status of the Household				
Wealth Quintile-2	0.06	0.24	0.23	0.42
Wealth Quintile-2	0.13	0.33	0.22	0.41
Wealth Quintile-2	0.20	0.40	0.21	0.40
Wealth Quintile-2	0.31	0.46	0.17	0.37
Wealth Quintile-2	0.31	0.46	0.17	0.38
Social group				
Others	0.24	0.43	0.33	0.47
SC/ST(Schedule Caste/ Schedule Tribe)	0.02	0.13	0.15	0.35
OBC(Other Backward Caste)	0.75	0.43	0.52	0.50
Observations	11074		50732	

Note: RRHs - remittances receiving households, Non-RRHs – Non-remittances receiving households.
Source: Kerala Migration Survey, 2010.

The descriptive statistics for selected variables used in our analysis are presented separately for remittance-receiving households and non-receiving households in Table 1. The table shows that the remittance-receiving households spent more than non-receiving households in terms of per-

capita health expenditure on average (INR 504 versus INR 412). With respect to access to healthcare services, remittance-receiving households are more likely to use private healthcare services than non-receiving households. Maximum years of schooling of household members age 17 and above indicate that members of remittance-receiving households have more years of schooling than members of non-receiving households. They are also most likely to have chronic diseases as compared to non-recipient households. Nearly 44 per cent of households have at least one member with a chronic disease in our sample. Remittance receiving households are more likely to have higher numbers of dependent children and older adults, which indicates that there is a high dependency on remittance income in the receiving households. The asset index shows that recipient households are wealthier than non-receiving households, suggesting that remittances are not randomly distributed across households. Across the social groups, Scheduled Caste and Scheduled Tribes (SC/STs) have lower level of remittance-receiving households as compared to Other Backward Castes (OBC) and the general category.

Empirical Specification

The main purpose of this study is to estimate the impact of remittances on health care expenditure and choice of access to health care services in government and private hospitals. Health expenses like all other investment and production activities are constrained and remittance income helps to ease the constraints along with other non-remittance income.

We use the following equation:

$$\mathcal{Y}_i = \rho_0 + \rho_1 R_i + \rho_2 X_i + \varepsilon_i \qquad (1)$$

where, $\mathcal{Y}_i$ is a continuous variable in case of per capita health care expenditure and also represents the binary outcome variable for access to private hospitals as one and zero for government hospitals. R_i is a binary variable which is equal to one if households received remittances from international migrants, and the reference group is households that have not experienced migration and have not received any remittances. X_i represents a set of vectors related to covariates describing individual, household, community, regional and wealth characteristics, and ε_i is the error term.

However, the model estimates in equation (1) may be biased because of the correlation between the error term and remittance income. The correlation between the error term and remittance income arises mainly from two sources. First, it originates from the unobservable and omitted variable bias. Remittances income and household health care expenses may be correlated by a wide range of characteristics. However, we lack information on factors such as household wealth or even the family genetic problems affecting employment and wealth, which affect the health expenditure incurred by households. Second, potential endogeneity originates due to the joint determination of remittance income and health expenditure. To address the potential omitted variable bias and joint determination of remittance income and health expense, we instrument the remittance variable in equation (1) using the information on migration networks as instruments for migration and remittances (Mckenzie & Rapoport, 2007; Mendola & Carletto, 2012). We instrumented for the remittance variable with: a) Percentage of households with at least one return emigrant from abroad at the taluk level in 2008 (with a two-year lag). b) A dummy variable for relatives of a household residing abroad, which captures the presence of migration networks within the family that are assumed to directly influence the migrant status of a household. The availability of these networks increases the probability of migrating abroad but does not directly affect health outcomes.

Empirical results

In order to get a better understanding of the impact of remittances on healthcare, we first examine how remittance income affects household per-capita healthcare expenditure. Secondly, we analyse the differential impact of these monetary inflows on access to public and private healthcare services. We present the estimation results of the effect of international remittances on health care expenditure and choice of hospital in sub-section 6.1 and 6.2, respectively. We present the heterogeneity effect of remittances receipts by splitting the analysis into various sub-samples.

Impact of remittances on household per-capita health expenditure

The first objective of the study is to examine whether remittances inflows increase per-capita health expenditure in the receiving households. Before presenting the empirical results, we would like to discuss the validity of the instruments used in our study. We have employed tests for both weak and under-identification of instruments. We used the Kleibergen-Paaprk LM statistic for testing under-identification of instruments under the null hypothesis that the equation is under-identified, meaning that the excluded instruments are relevant or correlated with the endogenous regressor. A rejection of the null hypothesis indicates that the model is identified, i.e., the matrix is full column rank. Even after the null hypothesis is rejected in the under-identification test, the problem of the weak instrument arises when excluded instruments are correlated with the endogenous regressor, but only weakly (Staiger & Stock, 1997). To check the weak identification, we used the Cragg-Donald Wald F-statistic, but as this statistic is invalid in the case of robust estimates, we used the Kleibergen-Paaprk F statistic instead for what?. Rejection of the null hypothesis represents the absence of the weak instruments problem. The critical values for the Kleibergen-Paaprk F statistic are provided in Stock et *al*. (2002). We apply the Staiger & Stock (1997) "rule of thumb" which says that the F statistic should be at least 10 for rejecting the null hypothesis of the weak instrument problem. The results of the Kleibergen-Paaprk F statistic are presented at the end of each table (table 2). All our weak identification F-statistics are greater than 10, which rejects the null hypothesis of the weak instrument problem in our model.

Furthermore, for the appropriateness and confidence in the instruments used in our model, we used the Sargen-Hansen test to check the over-identifying restrictions. The joint null hypothesis is that the instruments are valid instruments, i.e., uncorrelated with the error term. The excluded instruments are correctly excluded from the equation. Rejecting the null hypothesis casts no doubt on the validity of instruments. Since we are using a robust estimator, the test statistic is Hansen J statistic instead of Sargen-Hansen test. The Hansen J statistic shows that the equations are exactly identified. Hence, our results are robust and the instruments are valid.

Table 2 reports the endogeneity corrected estimating using the instrument variable approach with per capita healthcare expenditure as a dependent variable. The table shows that remittance inflows have a positive and significant impact on per capita health expenditure. The probability of per-capita healthcare expenditures appears to rise by 10.6 per cent when households receive remittance income from abroad, with an especially larger effect found in urban areas compared to rural areas. This indicates that remittance income reduces household financial constraints that affect investment activities and allow households to invest more in healthcare expenditure. The probability of per capita health expenditure significantly increases by 14.8 per cent, where household members have chronic diseases. As compared to chronic diseases, per-capita health expenditure increases less in households where household members have an acute disease. It is not statistically significant in rural areas which indicate that rural households are less likely to spend for acute diseases or use

traditional medicines. Per-capita health expenditure increases by 29 per cent where household members have both acute and chronic diseases, with per-capita health expenditures increasing twice as much in urban areas than rural areas.

Table 2. The effect of remittances receipt on per-capita health expenditure

Variables	**Total**	**Rural**	**Urban**
Remittances	0.106***	0.097***	0.151***
	(0.018)	(0.020)	(0.039)
Max. years of education of family member	0.010***	0.009***	0.012***
	(0.001)	(0.002)	(0.003)
Household member suffering from; (no disease as a reference group)			
Chronic disease	0.148***	0.140***	0.183***
	(0.013)	(0.015)	(0.026)
Acute disease	0.069***	0.021	0.210***
	(0.015)	(0.018)	(0.030)
Both (acute and chronic diseases)	0.291***	0.244***	0.506***
	(0.011)	(0.013)	(0.026)
Number of dependents(number of household members aged below 12 years and above 65 years)	-0.010**	-0.006	-0.025***
	(0.004)	(0.004)	(0.008)
Wealth Status of the Household (Wealth Quintile one as reference group)			
Wealth Quintile-2	0.035***	0.038***	0.021
	(0.013)	(0.015)	(0.032)
Wealth Quintile-3	0.073***	0.080***	0.039
	(0.014)	(0.015)	(0.031)
Wealth Quintile-4	0.118***	0.143***	0.022
	(0.015)	(0.017)	(0.033)
Wealth Quintile-5	0.132***	0.130***	0.113***
	(0.016)	(0.019)	(0.033)
Social group (Others as a reference group)			
SC/ST(Schedule Caste/ Schedule Tribe)	-0.074***	-0.079***	-0.036
	(0.015)	(0.016)	(0.036)
OBC(Other Backward Caste)	-0.048***	-0.053***	-0.023
	(0.010)	(0.011)	(0.020)
Constant	5.713***	5.694***	5.706***
	(0.024)	(0.028)	(0.048)
Observations	14,117	10,979	3,138
R-squared	0.114	0.109	0.173
F-statistic	73.15	54.12	26.03
Under identification test (Kleibergen-Paap rk LM statistic)	6270	4970	1280
Weak identification test (Kleibergen-Paap rk Wald F statistic)	5628	4530	1071
Hansen J statistic (over identification test)	1.306	4.776	0.339

Note: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1, District dummies are used but not presented.

Years of education of a household member increases per-capita health expenditure, and the effect is especially larger in urban areas. This may be due to the fact that more educated persons are the most likely to be employed and earn a much higher income and would, therefore, spend more on formal treatment for their health problems, while less-educated persons would be more likely to depend on drugs from local outlets for self-treatment. On the other hand, having two or three dependent members in a family reduces the probability of per-capita health expenditure by one per cent since families with limited resources that are burdened by a higher number of dependent members would be less likely to spend on healthcare. The incidence of per-capita health expenditure is 13.2 per cent higher for wealthier households (fifth quintile) as compared to poor households (first quintile). The amount spent on healthcare increased systematically with an increase in households' wealth status. The possible reason is that wealthier households mostly use healthcare services provided by the private sector, which charges a substantially higher amount of fees but offers better services than the government sector does. The low-income families use low-priced or subsidised healthcare services because they tend to spend less on healthcare. The per-capita health expenditure across the social groups confirms the inequality in healthcare expenditure. For instance, the households that belong to the SC/STs are 7.4 per cent less likely to spend on healthcare as compared to the general category.

Next, we divide the sample by different wealth quintiles and social groups in order to understand which subgroups are impacted most by remittances receipts, and the results are shown in Appendix A1. It is observed that household per-capita health expenditure is higher in the lower wealth quintile as the group shows more responsiveness to the inflow remittances towards health care. It indicates that lower income households spend a higher share in healthcare expenditures and remittances enable them to spend more on healthcare. Moreover, remittance income is most likely to increase the per-capita health expenditure of households belonging to the general category, and the SC/STs shows a statistically insignificant effect on the health expenditure.

Impact of remittance income on choice of hospital

After analysing the impact of remittances inflows on household per-capita health expenditure, we examined how remittances influence the sample households' choice of healthcare utilisation between public and private healthcare services. Since access to private healthcare is a binary variable, we used the Probit model. We first tested the endogeneity of the remittance variable through the Wald test of exogeneity. The chi-square *p*-value is significant in all the equations. The higher values of the chi-square statistics indicate that remittances are endogenous, and the error term is correlated in the model. Therefore, the IV model is preferred for consistent estimates. We use the Amemiya-Lee-Newey minimum test to check the over-identifying restrictions (Amemiya, 1979; Lung-Fei, 1992; Newey, 1987), which are presented at the end of table 3. Our results are robust, and the instruments are valid, which means it is not correlated with the error term.

Table 3 shows that remittances receipts have a significant positive impact on access to private healthcare services. Remittance receiving households have a 46.3 per cent higher probability of accessing private healthcare services than the non-remittance receiving households. As compared to rural areas, remittance-receiving households live in urban areas and mostly use private healthcare services. The effect is more than one-and-half times higher in urban areas than their rural counterparts. The number of years of education of family members significantly increases the probability of access to private healthcare services. The probability of accessing private healthcare services increases by 19.8 per cent, where household members have acute diseases compared to

chronic diseases. Compared to their urban counterparts, persons who live in rural areas are more likely to use private healthcare services for acute conditions. Since wealthier households, faceless liquidity constraints, households belonging to the higher wealth quintile (fifth wealth quintile) are 82.9 per cent more likely to use private healthcare services than households in the lower wealth quintile (first wealth quintile). As we expected, persons belonging to the SC/ST and OBC communities are 40.3 per cent and 11.3 per cent respectively less likely to access healthcare services provided by the private sector.

Table 3. Impact of remittances on access to private healthcare services

Variables	Total	Rural	Urban
Remittances	0.463***	0.397***	0.704***
	(0.054)	(0.062)	(0.120)
Max. years of education of family member	0.030***	0.028***	0.037***
	(0.004)	(0.005)	(0.010)
Household member suffering from; (Chronic disease as a reference group)			
Acute disease	0.198***	0.188***	0.154*
	(0.038)	(0.043)	(0.088)
Acute and chronic disease	0.172***	0.155***	0.129
	(0.037)	(0.043)	(0.087)
Number of dependents(number of household members aged below 12 years and above 65 years)	0.007	0.013	-0.007
	(0.012)	(0.013)	(0.028)
Wealth Status of the Household (Wealth Quintile one as the reference group)			
Wealth Quintile-2	0.113***	0.101**	0.157
	(0.040)	(0.044)	(0.100)
Wealth Quintile-3	0.281***	0.267***	0.341***
	(0.041)	(0.046)	(0.100)
Wealth Quintile-4	0.550***	0.558***	0.531***
	(0.045)	(0.050)	(0.107)
Wealth Quintile-5	0.829***	0.793***	0.891***
	(0.050)	(0.059)	(0.107)
Social group (Others as a reference group)			
SC/ST(Schedule Caste/ Schedule Tribe)	-0.403***	-0.395***	-0.464***
	(0.046)	(0.050)	(0.124)
OBC(Other Backward Caste)	-0.113***	-0.087***	-0.181**
	(0.030)	(0.034)	(0.072)
Constant	-0.994***	-1.111***	-0.876***
	(0.078)	(0.094)	(0.162)
Observations	11,179	8,799	2,380
Amemiya-Lee-Newey minimum chi-sq statistic	1.093	1.052	0.014
Wald-statistic	1593	1168	468.2
Wald test of exogeneity	21.10	14.20	4.834

Note:Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1, District dummies are used but not presented.

We have presented the heterogeneous effect of remittances receipts on access to private healthcare services in Appendix A2. The empirical results show that access to private healthcare

services increases across the wealth quintiles, but the effect is higher among the persons belong to the lower wealth quintile. The analysis by social groups shows that the increase in access to private health services increases with the inflow of remittances across social groups, except in the case of the SC/STs.

Conclusion

Using data from Kerala Migration Survey 2010, this study examines the impact of remittances inflows on household expenditure on healthcare services in Kerala, a state that has been experiencing large scale emigration to the Gulf countries and remittances inflows during the last three decades. Employing an IV approach to address the potential endogeneity of remittances, we found that the inflow of remittances has a positive impact on per-capita health expenditure. Three-fourths of remittance-receiving households' access to private hospitals for healthcare services. Private hospitals charge higher prices for healthcare services, and remittance income reduces households' financial constraints and enables them to access private healthcare services.

This study also found that remittance income has a significantly greater influence on the healthcare expenditure of lower-income households relative to higher-income households. The expenditure on healthcare services can push lower-income households into poverty and remittances from abroad help ease the budget constraint. For example, a study on India shows that 3.5 per cent of the population fall below the poverty line due to out-of-pocket health expenditures (Shahrawat & Rao, 2012). This indicates that remittances act as an insurance mechanism against health shocks and enable lower-income households to spend more on health. In this way, remittance income helps to bring the lower-income families out of poverty and also helps in reducing the inequalities in health expenditure in the countries of origin. These findings are consistent with existing studies that explored higher health expenditure as a response to remittances inflows (Ambrosius & Cuecuecha, 2013; Amuedo-Dorantes & Pozo, 2011). Although the results are suggestive of decreasing inequality in health expenditure between income groups, this is not true across social groups. We find that socially disadvantaged groups such as Scheduled Tribes and Scheduled Castes remain unaffected by the inflow of remittances. There are large divergences in investment in human capital between social groups and the SC and ST communities remain disadvantaged and have failed to reap the benefits of remittance-led development. Policies need to focus on bringing these socially disadvantaged groups into the migration-driven development trajectory.

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Appendices

Appendix A1 Impact of remittances on household per-capita health expenditure

Wealth quantiles	(Q1)	(Q2)	(Q3)	(Q4)	(Q5)
Remittances	0.162**	0.003	0.073*	0.126***	0.136***
	(0.063)	(0.048)	(0.038)	(0.034)	(0.035)
Observations	2,959	2,809	2,864	2,715	2,770
R-squared	0.092	0.069	0.114	0.149	0.163
F-statistic	14.84	9.878	17.71	22.54	25.30
Under identification test (Kleibergen-Paap rk LM statistic)	1128	1099	1246	1296	1266
Weak identification test (Kleibergen-Paap rk Wald F statistic)	904.3	895.8	1095	1229	1155
Hansen J statistic (over identification test)	2	2.961	0.174	0.455	0.134
(B). Social groups	General	SC/ST	Other-OBC	Muslims-OBC	
Remittances	0.140***	0.182	0.070**	0.059*	
	(0.031)	(0.116)	(0.030)	(0.031)	
Observations	4,867	1,753	3,537	3,044	
R-squared	0.133	0.159	0.101	0.102	
F-statistic	32.15	13.86	17.50	15.22	
Under identification test (Kleibergen-Paap rk LM statistic)	2440	555.4	1352	1154	
Weak identification test (Kleibergen-Paap rk Wald F statistic)	2435	400.7	1086	921.2	
Hansen J statistic (over identification test)	0.584	0.563	1.563	3.091	

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1
Same controls are used as used in table 2.

Appendix A2 Effects of remittances on access to private healthcare services

(A). Wealth quantiles	**(Q1)**	**(Q2)**	**(Q3)**	**(Q4)**	**(Q5)**
Remittance	0.821***	0.439***	0.329***	0.503***	0.377***
	(0.218)	(0.141)	(0.117)	(0.103)	(0.115)
Observations	2,305	2,232	2,247	2,341	2,034
Amemiya-Lee-Newey minimum chi-sq statistic	0.167	2.114	0.364	0.643	.456
Wald-statistic	281.7	200.6	268.8	131.6	54.25
Wald test of exogeneity	4.786	0.715	4.463	6.945	3.658
(B). Social groups	**General**	**SC/ST**	**Other OBC**	**Muslim OBC**	
Remittance	0.431***	0.363	0.494***	0.510***	
	(0.096)	(0.465)	(0.088)	(0.091)	
Observations	3,564	1,237	3,181	2,834	
Amemiya-Lee-Newey minimum chi-sq statistic	2.666	2.237	2.984	2.721	
Wald-statistic	367.7	163.1	410.8	374.5	
Wald test of exogeneity	6.593	0.423	5.655	5.889	

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1
Same controls are used as used in table 3.