

**A Micro-level Analysis of the Effect of
Remittances on Health Care Expenditures:
*A Case study of Pakistan***



By
Muhammad Shoab

**DEPARTMENT OF Health ECONOMICS
Pakistan Institute of Development Economics
Islamabad, Pakistan.
2016**

A Micro-level Analysis of the Effect of Remittances on Health Care Expenditures: *A Case study of Pakistan*



By
Muhammad Shoab

Supervised by:
Dr. Muhammad Jehangir Khan

**The dissertation is submitted to Pakistan Institute of Development Economics
Islamabad in partial fulfillment of the requirement for the award of the degree of
Masters of Philosophy in Health Economics**

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

*In the Name of Almighty Allah,
The Most Merciful and
The Most Beneficent..*

ACKNOWLEDGEMENT

First of all I am grateful to Almighty Allah, the most compassionate and the most gracious who gave me strength to accomplish this task successfully. I am extremely grateful to my parents for raising me with the love for knowledge, creativity and ambition, for instilling the qualities of humility and hard work in me, and for their sacrifices and hard work in order to provide me with the best of everything.

I wish to express my sincere gratitude to my supervisor, Dr. Muhammad Jehangir Khan for sharing his knowledge, innovative ideas and passion for this piece of work. His doors has always been open for guidance and discussion, and he has been more than generous with his time. I would pay my regards to Dr. Mehmood Khalid for his encouragement and enthusiasm has been unwavering and has taught me to believe in myself as researcher. I have been very fortunate to work with and learn from him, and I will always remain indebted to him for all his efforts in facilitating the completion of this dissertation.

I also acknowledge the best companionship of my friends Abid Hussain, Sami Ullah Khan Khattak, Ashfaq, Muhsin Ali, Almas Chacho, and all my classfellows who add beautiful memories to my life.

A penultimate acknowledgement goes to my beloved brothers for their immense support. Their dreams and aspirations to see me as a successful individual have served as the main motivation behind all my quests to achieve excellence in academics and at work, without whom the achievements in my life would be meaningless. Finally I would like to pay my regards to Pakistan Institute of Development Economics for giving me this opportunity to learn and excel.

Muhammad Shoab

DEDICATION

This work is dedicated

To

My Mother

&

My Father Muhammad Hashim Khan

**All I have and will accomplish is only possible due to their love
and sacrifices**

ABSTRACT

This study investigates the impact of foreign remittances on healthcare expenditure in Pakistan, while using Pakistan Standard Living Measurement (PSLM) 2011-12 household survey data from Pakistan. Healthcare expenditure of a household is classified into two broad categories; expenditure on clinical services and expenditure on medicines. Henceforth, analysis has been undertaken for these two sub-groups of expenditure categories for urban and rural areas of the country. Selection bias usually confound causal relation in such circumstances, therefore, propensity score matching (PSM) technique is implied. Our results show that remittance-receiving households spend more on medicine and clinical services than non-receiving households do. The evidence holds both in case of rural and urban areas for both sub-groups of expenditure. It is further shown that expenditure on clinical services is higher than expenditure on medicine.

TABLE OF CONTENTS

| | |
|---|-------------|
| ACKNOWLEDGEMENT | III |
| DEDICATION | IV |
| ABSTRACT | V |
| TABLE OF CONTENTS | VI |
| LIST OF TABLE | VIII |
| LIST OF FIGURE | VIII |
| CHAPTER 1 | 1 |
| INTRODUCTION | 1 |
| 1.1. Background of the Study | 1 |
| 1.2. Importance of the Study | 3 |
| 1.3. Objective of the Study | 4 |
| 1.4. Hypotheses of the Study | 4 |
| 1.5. Organization of the Study..... | 5 |
| CHAPTER 2 | 6 |
| LITERATURE REVIEW | 6 |
| 2.1. The Nature of the Demand for Health Care | 6 |
| 2.2. Determinants of Health Care Expenditures..... | 9 |
| 2.3. Theories of Remittances..... | 11 |
| 2.4. The Link between Remittances, Migration and Health Care Expenditure | 12 |
| 2.5. The Role of Remittances and Healthcare Expenditures in Pakistan | 15 |
| CHAPTER 3 | 17 |
| DATA SOURCES AND METHODOLOGY | 17 |
| 3.1. Data Source | 17 |
| 3.2. Method for Measuring Impacts | 19 |
| 3.3. Quasi-Experimental Method | 19 |
| 3.4. The Methodological Framework..... | 19 |
| 3.5. Methodology: A Note on Propensity Score Matching..... | 20 |
| 3.6. Variables | 25 |
| <i>Medical Expenditures</i> | 25 |

| | |
|--|-----------|
| <i>Clinical Expenditures</i> | 25 |
| <i>Total Health Care Expenditures</i> | 25 |
| <i>The Measurement of Remittances</i> | 25 |
| <i>Gender of Household Head</i> | 26 |
| <i>Education of Household Head</i> | 26 |
| <i>Household Size</i> | 27 |
| <i>Region</i> | 27 |
| <i>Summary</i> | 27 |
| CHAPTER 4 | 28 |
| EMPIRICAL RESULTS | 28 |
| 4.1. Impact of Remittances on Healthcare Expenditure (Urban Sample) | 28 |
| 4.2. Impact of Remittances on Healthcare Expenditure (Rural Sample)..... | 36 |
| CHAPTER 5 | 44 |
| CONCLUSION AND POLICY RECOMMENDATIONS | 44 |
| 5.1. Conclusion | 44 |
| 5.2. Policy Recommendations | 45 |
| REFERENCES | 47 |

LIST OF TABLE

| Table | Title | Page No |
|-----------------|--|----------------|
| Table 1: | Sample Profile Of Population..... | 18 |
| Table 2: | Probit Estimation for Constructing the Propensity Scores to Estimate Impacts of Remittances on Urban Household. | 29 |
| Table 3: | ATT Effect of Remittances on Health Care, Medicine and Clinical Expenditure (Urban Sample)..... | 31 |
| Table 4: | Covariates between Treated and Non-Treated Units of Remittances Receiver and Non-Receiver | 33 |
| Table 5: | Biasness between Matched and Unmatched Variables in Urban Sample | 35 |
| Table 6: | Probit Estimation for Constructing the Propensity Scores to Estimate Impacts of Remittances on Rural Household..... | 37 |
| Table 7: | ATT Effect of Remittances on Health Care, Medicine and Clinical Expenditure (Rural Sample) | 39 |
| Table 8: | Covariates between Treated and Non-Treated Units of Remittances Receiver and Non-Receiver in Rural Sample | 41 |
| Table 9: | Biasness between Matched and Unmatched Variables in Rural Sample..... | 42 |

LIST OF FIGURE

| Figure | Title | Page No. |
|------------------|---|-----------------|
| Figure 1: | Propensity of Scores for Remittance Receiver and Non-Receiver | 32 |
| Figure 2: | Standardized Percentage Bias across Covariates (Urban Sample)..... | 34 |
| Figure 3: | Standardize Difference between Matched and Unmatched Variables | 35 |
| Figure 4: | Propensity of Scores for Remittance Receiver and Non-Receiver | 40 |
| Figure 5: | Standardize Difference between Matched and Unmatched Variables in Rural Sample..... | 43 |

CHAPTER 1

INTRODUCTION

1.1. Background of the Study

Over the time, labor markets around the world has become internationalized and for employment purposes, the labor force has increasingly migrated from one region to the other. The foreign reserves sent by these migrant labor force is called Remittances. Remittances are considered an important source of income in the developing countries of the world. At household level, these remittances help to promote consumption, private investment, reduce poverty, induce educational and health expenditure and promote basic facilities. (Giuliano and Ruiz-Arranz, 2005; Mundaca, 2009).

According to the United Nations report (2013), world's migrant population is about 231.5 million, which is 2.3 percent of the world's population. During the last decade, world's migration growth rate was 2.2 percent, which was twofold of the previous decade. Pakistan is a developing country and over the time migration from Pakistan has also increased. In 2013, 4 million Pakistanis were reportedly migrated which was 2.3 percent of the total population. Along with the increase in world migration over time, remittances inflow to the receiving countries has also increased. In 2012, world remittances were \$529 billion out of which \$401 billion has been sent to the developing countries. In 2012, Pakistan was one of the top ten remittance receiving countries, worth 14\$ billion (World Bank, 2012).

The role of migration in the economic development has always been debatable and controversial among the policy makers and academics which are still inconclusive (Kalaj, 2015). The literature concentrates on how remittances are spent by remittance receiving

families and its consequences in terms of cost and welfare for the resident economy. Researchers often disagree and are provocative over the extent to which remittances receiver families use these monetary assets productively. Some researches reveal that remittances are mainly used for short period consumption requirements rather than for long time investments. To which extent remittances contribute to indigenous prosperity rest on the household context, circumstances and the way decisions are made (Kalaj, 2015).

One of the important question that draws less attention of the researchers is that how remittances are associated with health care expenditures of the households? On addressing this issue few Studies are available that have examined the role of remittances on health care expenditure (Jorge, 2008; Amuendo-Dorantes and Pozo, 2009; Catalina, 2009; Matthieu, 2011; Kalaj, 2015). Most of the studies show that remittances has a positive significant impact on health (health care expenditure). Remittances have both direct and indirect impact on the health of the household. On the direct side, when remittances comes to the household, it increases the income of the household which help to relax credit constraints and therefore raise health expenditure of the household (Fajnzylber and Lopez, 2007). Another indirect channel through which remittances positively affect health is that when people migrate, it will increase the knowledge and awareness about health and thus raise positive impact of remittances on health (Hildebrand and McKenzie, 2004; Lindstrom and Munoz-Franco, 2006).

Health is one of the key factor of human capital and of future productivity, thus it has a significant impact on poverty reduction and on economic growth. According to Grossman (1972), health capital is different from other kind of human capital because person's

“stock of knowledge” affects market and nonmarket actions, while “the stock of health” defines the amount of time that can be spent on earning money and consuming commodities. This carries differences in health demand, when compared with the demands for other assets. Basically, health is demanded for two motives; as an investment commodity and a consumption commodity. Individual’s demand for health is positively connected with labor incomes. But, does this direct relationship hold with non-labor incomes, such as remittances? And do remittances affect household consumption of health?

1.2. Importance of the Study

The influence of remittances on health care expenditure cannot be denied. Broad literature is given in this regard but very limited work has been done in the context of Pakistan. The proposed study recognizes the importance of this dimension and attempts to analyze the impact of remittances on health care expenditure in Pakistan. The studies of Abbas and Arif illustrates the impact of remittances on the health care of the migrant labor’s family members in Pakistan (Abbas *et al*, 2014; Arif, 2004,). There are some issues with the existing studies. These studies have limited scope as the sample size is small and only restricted to rural region. Another issue with these studies is that these studies have not taken into account the selection biasedness issue, raised by ignoring the observable characteristics of household in the study.

Keeping in mind the above mention gap, this study analyses the micro-level impact of remittances on households’ health care expenditure. In doing so, we analyze the impact of remittances on households’ health care expenditure in two ways. Firstly, we examine the impact of remittances on households’ clinical expenditure. In this we consider fees

paid annually to doctors, specialists, Hakeem/Midwives, hospital charges, laboratory test etc. Secondly, we examine the impact of remittances on household's medicine expenditure. In this expenditure we consider the annual expenses on purchase of medicines and vitamins, medical apparatus, and other equipment or supplies etc. For the analyses PSLM 2011-12 has been utilized and PSM technique has been implemented. In order to see region wise difference in household health expenditure, we separately analyze the rural and urban areas.

1.3. Objective of the Study

The main objectives of the study are:

- I) To examine the impact of remittances on household's health care expenditure in Pakistan.
- II) To give policy recommendation/suggestions based on our finding that how remittances can be channelized for health care expenditure.

1.4. Hypotheses of the Study

The hypotheses of the study are:

- I) There is no impact of remittances on household's total health care expenditure.
- II) There is no impact of remittances on household's health care clinical expenditure.
- III) There is no impact of remittances on household's health care medicine expenditure.
- IV) There is no differences in household's health care expenditure across region.

1.5. Organization of the Study

The structure of this study is schematized in five thematic frameworks such as; Chapter 1 discussed the Introduction with the concept to the background of the study and knowhow of the problem under consideration. Review of related empirical research is demonstrated in the Chapter 2. Data sources and methodology has been reported in Chapter 3. Results and discussions has been testified in Chapter 4. However the finale of this study reports conclusion and policy recommendations.

CHAPTER 2

LITERATURE REVIEW

This research focuses on the relationship between health and migration in the developing world. This research also studies the impacts of migration and their remittances on the provision of health care and health spending. In this chapter we discussed the detail review of the past literature. Section 2.1 discuss the theoretical framework related to the demand for health care. Empirical review of the determinants of health care expenditure are presented in section 2.2. Theories of remittances are given in section 2.3. Section 2.4 discussed the empirical review of the past literature about migration, remittances and their impacts on health care expenditure while studies related to Pakistan are reviewed in section 2.5.

2.1. The Nature of the Demand for Health Care

Economists define health as an asset that is capable of being produced, so, it can be said that health production is viewed as an investment to counterbalance the capital consumption (Zweifel *et al.*, 2009). The input of medical care and prevention can achieve investment. The reward for spending in health capital is to spend less time in bad health. Medical care's demand is a derived demand. The desire to be healthy instigates consumers to consume in health care not as an end.

Grossmans' model about the health demand function starts with the assumption that every individual is born with an initial capital stock of health, and the value of this stock diminishes with the passage of time, but the value of this stock could be increased by investment in health. Every household is subject to a household production function, in

which it attempts to maximize its utility in a given income and resource constraints, and in this way, medical care can be an inputs into the utility function which is subject to the same income and resource constraints like other.

This model assumes that all individuals assess the benefits received from expenditures that improve health and compare these benefits with those received from the expenditures on other goods and services. It is assumed that consumers have knowledge about their own health status, its rate of production and depreciation.

The inter-temporal utility function for a representative household is defined as;

$$U = U(H_0\phi_0, \dots, H_n\phi_n; Z_0 \dots Z_n) \dots \dots \dots (2.1)$$

In equation 2.1, $H_i\phi_i$ is the total expenditures on health care. H_0 is the initial stock of health, H_n is the stock of health in period n, ϕ_n is the health services used up in period n, and $H_n\phi_n$ is the total health care expenditures in period n. Z_i are the share of total expenditures of household which are spent on the goods and services other than health care. In order to satisfy the rational expectations of the household, this inter-temporal function can be maximized to develop the behavior of the household. The costs to the jth consumer are the opportunity costs of health care expenditures, which are summed as the interest rate forgone for other resources and the depreciation rate. The benefit from the health care expenditures are categorized into the monetary benefits y_i ¹ alongside physical benefits a_j both in marginal terms. Cost benefit analysis for marginal changes is the pre requisite for maximization keeping in consideration the provided resources of household. The cost benefit analyses is given as;

¹ Utility is stated in monetary terms.

$$\alpha_j + y_j = r_j + \delta_j \dots \dots \dots (2.2)$$

In the above equation 2.2, y_i is the marginal monetary benefit, α_j is the marginal physical benefit from health care expenditure. The cost of health care expenditure is the forgone interest rate r_j and δ_j the depreciation rate δ_j .

This model is the benchmark for the upcoming empirical models of the demand for health care expenditures. The maximization of the inter-temporal utility function through cost benefit analysis intuitively leads the cost minimizing health care demand, provided the initial stock of health, the importance of this structure is denoted by some facts. High quantity of health services are demanded if the earlier original assets and labor wages are high, there is inverse relationship between the prices of health services and the demand for health care, and the education will have a negative relationship with quantity demanded of health services. The studies find out that demand for health care is perceived in similar pattern as demand for other commodities. The maximizing behavior of consumer is obvious in the optimal choice of health care services given the wants and resources. Households spends on the health services only if its net benefits are more than the net benefits of the other commodities. When the influence of health on wealth is taken into consideration it becomes investment model (Grossman, 1972). Given the initial stock of health, this pure investment model has similar implications. High quantity of health capital is demanded if the earlier original assets and labor wages are high, where the utility is stated in monetary terms. The raised cost of time is overtaken by this effect because the job hours saved have more benefits than the costs of health care expenditures (Zweifel, et al., 2009). This concludes that for a rational consumer the optimal health capital becomes high with a rise in the wages. Moreover there is inverse relationship

between the prices of health services and the investment in health care due to higher costs attached. Another important implication of the model is that there is a positive impact of level of education on the health efficiency. If all the related alternatives are considered, and assuming a relatively less price elastic health demand, the higher level of education may lead to the little demand for health care². If it is assumed that with increase in age the rate of decline of health services increases, then the model leads to another important consequence that there is a positive relationship between the age and the health care demand, provided that there is a relatively less price elastic health demand.

2.2. Determinants of Health Care Expenditures

There are many studies in literature of health care which focus on finding the factors affecting the demand for health services, especially in the underdeveloped nations.

Health care is studied with respect to the explicit and implicit costs and the anticipated revenues resulting from the use of health care services. Therefore, health is treated as investment besides the consumption for which cost benefit analysis happens. The optimal level of investment in health care of household is maximized where the marginal anticipated revenue of health at least equates to the marginal direct and indirect costs of health care.

The growing literature on determinates of health care suggest that there are many factors which determine the demand for health care. The characteristics specific to the individual which determine the health care demand include the skills, age and gender of the individual. The features of household which determine the demand are the organization of the household structure, social, family and economic contexts, age of the household,

²The assumption of relatively less elastic health demand in relation to wealth should be fulfilled in order to reach to the inverse relation with level of education (Grossman, 1972).

and development and deviations in the technology and practical health training. Many Demographic characteristics determine health demand, which include the structure of market for the workers and wages, the government institutions and strategies, access to the education with respect to its quality and quantity. (Xu Kea et al, 2011; Holmes, 1999; Sherpa, 2012).

Among the other determinants, an important one is the level of parental education. Toor (2005) found that the parents with high level of educations are likely to take more care of their kids which leads to better health services for the children and incident and length of illness is decreased. Wim Groot et al, (2006) analyzed the effect of parental education on health care and they found out that the education of parents effects the education of the children which in turn effect the high demand for health care services. They studied that the education of an individual is the main determinant of demand for health and the parents with high level of education more likely send their children to schools, therefore the education of the parents positively affect the individual education which is a determinant of health demand. Thus parental education is an indirect determinant of health demand considering educational accomplishments effect. Odubunmi, (2013) studied the effect of education on the health care and he found out that with the increase in the level of education there are likely better health care services sought. If a parent is educated it more likely trust on standard modern medical treatments instead of classical outdated medicines. Thus it is concluded that parental education is one of the important determinants of the demand for health care. Hotchkiss et al, (1998) analyzed the regional effects on the health care expenditures and they concluded that in rural areas the

expenditures are relatively high as compared to the urban areas, where budgetary positions are matched for the analysis.

2.3. Theories of Remittances

Remittances are the funds and money send to the home of a migrant from abroad. There are studies which analyze the motives behind the sending of remittances from abroad to their homes by migrants. Lucas and Stark (1985) describe two reasons due to which migrants send remittances to their family. First one is altruism which means that the sender wants that its family enjoy the consumption of goods and services which indirectly maximize the utility of the migrant because the consumption of other recipients exists in the utility function of the sender. The other one is self-interest which means that the individual is ambitious about heirs and successors, seeking to gain the faith of the family, and consider the expected coming back to its home in future.

Rapoport and Docquier (2006), also discussed the motives behind the remittance sending. They found three motives, which are incentive towards investment, altruist nature to the family and insurance motivations to protect the family in home from the great unforeseen effects. The New Economics of Labor Migration Theory (NELM) states that when a nation is lacking well-organized insurance institutions, then remittances serve better to pay compensations to the affected persons. (Stark and Bloom, 1985; Cassarino, 2004).

Shimamoto (2014) analyzed the motives behind the remittances for Albania, and he concluded that there are three motives behind remittances, which are the altruist nature towards the family in home, ambitions towards the heirs, and incentives relating exchange rates between the two nations. Cox et al. (1998) used a household survey data

from Peru to analyze the motives behind the transfer of remittances from abroad. It was found that the positive relationship exists between remittance income and pre-transferred PH income which is statistically significant. Although it was also concluded that while assuming the altruism of the sender, there does not exist a significant correlation between the two kinds of income. A study for Philippines by Young and Choi (2007) confirms the result that main motives of sending remittances is to protect their families from unforeseen activities. The similar reason for sending the remittances from abroad is described by Ilahi and Jafarey (1999) which concluded that the remittances are for the purpose of giving back the early investment done by family on the individual in the form of establishing its job in foreign or education expenses so far.

2.4. The Link between Remittances, Migration and Health Care Expenditure

The relationship between the remittances and health care expenditures is analyzed in various studies, which generally discovers a positive link between the two variables. While remittances lead to increased health care expenditures, the effect of migration is also studied with respect to health. Here are some studies which linked the migration, remittances, and its effect on health care expenditures.

Lindstrom and Munoz-Franco (2006) analyzed the linkage between migration and health care expenditures through channelizing remittances, applying analysis to the data for Guatemala. They also studied the migration effects on the health care expenditures for mothers and children discussing the social connections between the recipients of remittances with the neighboring households in the society. It was concluded that migration has a positive significant effect on health care expenditures directly through remittances received, especially for rural areas. Increased level of migration facilitates the

access to resources, which cause the strong linkage between migration involvement and supporting proper distribution of resources.

Amuedo-Dorantes (2007) examined remittances and healthcare expenditure patterns of populations in origin communities in Mexico. Application of instrumental variable approach showed that healthcare expenditure rise in response to the receipt of remittances. The extended study by Amuedo-Dorantes and Pozo (2009) studied the relationship between the two variables in order to confirm their results for 2007. The role of Remittances on Health Care Expenditures by analyzing data of 2001 for Mexican household. They confirmed through instrumental variable approach that International remittances raise health care expenditures. Among lower-income households, Health care expenditure is less responsive to remittance income. They also find that households lacking any health care coverage exhibit greater remittance income sensitivity.

Jorge (2008) analyzed the effect of remittances on health care expenditures in the absence of insurance policies for the clinical services provided to the workers. The random effect Tobit model was used for the analysis. It was concluded that remittances lead to increased expenditures on health care services. The distinction between remittances and “institutional transfers” were made clear, and empirically it was found that 10% increase in the receipt of remittances by migrants are likely dedicated to the expenditures on health care.

Valero-Gil (2008), in his study for Mexico analyzed the association between remittances and health care expenditures. Cross sectional data and Tobit GLS model has been utilized. Findings show that remittances and households expenditures on health care has positive and significant relationship. Results further confirm that the effect on health care

related expenditure of rise in remittances is almost 11.3 % of the increase in remittances for households which have no access to Employment medical service, and of 8 % families with approach to employment medical service.

Frank (2009) explored the link between Remittances and health care expenditure in Mexico as well. He applied cross sectional data for the period of 2006 and utilized logistic approach. They confirmed that Improving the coverage and quality of care within Mexico health care system will help to ensure that remittances serve as a complement, and not a substitute, to formal access to care.

Drabo and Ebeke (2010) searched the relationship between remittances, public health spending and foreign aid in the access to health care services in developing countries. They used instrumental variable method and cross sectional data of 2007. Findings show that remittances, health aid and public spending are important determinants of the access to health services in recipient's countries, remittances lead to a sectorial glide in the uses of health care services from the public to the private sector for the intermediate and richest income classes.

Clement (2011) study remittances and household expenditure on health care for Tajikistan. He utilized Living Standards Measurement Survey and propensity score matching analysis. He concludes that receiving transfers from abroad increases the consumption expenditures and decreases investment expenditures by the same proportion, however, the domestic transfers reduce housing and agriculture expenditures and significantly increase health expenditures.

Ponce et al (2011) examines the role of international remittances on health outcome, a survey based data of year 2006 has been used. The application of instrumental variable technique showed that remittances have no significant effect on child health however, it has statistically significant effect on consumption and on over health expenditure.

From these studies it is prominent that the flow of remittances by migrants from abroad to the home country is effective in improving the health status of the members of household living in the home country. It is concluded from the above discussion that remittances positively affect the health care expenditures. This effect is categorized into two type of effects, either direct effect of remittances on the health care expenditures or indirect effect of migration on the health expenditures through remittances received by the households living in home country.

2.5. The Role of Remittances and Healthcare Expenditures in Pakistan

The impact of remittances received by the migrants on the increase in expenditures on the health activities is analyzed in Pakistan, and generally a positive impact of remittances, and negative impact of being migrant is found there.

Arif (2004) analyzed the role of migration in health activities along with other socio-economic and demographic characteristics of households. The household data of Pakistan Socio-economic Survey (PSES) for 2001 was used for analysis. A multivariate logit model was applied to the migration due to the dichotomous nature of dependent variable. Instead of considering the remittances received from the migrated household, the study focused on the migration effects. The study suggests to have likely a negative impact of

being a migrated household on the infant mortality, which is highly negative for female kids. Selection bias may arise due to ignoring matching selection account.

Abbas et al (2014) studied the impact of remittances on the household expenditure patterns, which was used as a proxy for describing the welfare of household. Primary data was collected from a Tehsil in District Jhang, Punjab, through a questionnaire survey from 280 households, half of which are migrants and the other half are not. The multiple regression estimates was used to evaluate the impact of remittances received on the per capita expenditures as a whole, and then regressions on individual components of the household expenditure. The results showed likely a positive impact on the total expenditures on food, education and health. The same stands for role of remittances in health care expenditures. This study ignores the sample matching selection bias, and avoids the extension to rural versus urban analysis.

Bilqees and Hamid (1981) studied the migration effects on the poverty, and analyzed various expenditure effects, specifically on the female members of the migrant households. The data from migrants and non-migrants of six dhoks from a village in Punjab was used. The migration results show that the remittances received alleviate the poverty in general, but health effects are negligible, as the health care expenditures by migrants and non-migrants both are low and do not differ much.

CHAPTER 3

DATA SOURCES AND METHODOLOGY

This chapter describes the data source and methodological framework used to examine the impact of remittances on the state of health care expenditure. Section 3.1 of this chapter gives data description of this study, section 3.2 elaborates the method of measuring impact, section 3.3 explains Quasi-experimental method, section 3.4 explains methodological framework, section 3.5 deals with detailed description of methodology, and final section 3.6 gives the detail explanation of the variables (dependent variable, explanatory and control variables) used in this study.

3.1. Data Source

The data for this study is drawn from the Pakistan Social and Living Standard Measurement Survey (PSLM) of 2011-12, conducted by Pakistan Bureau of Statistics, a nationally representative survey that provides information on various demographic and socio-economic characteristics of individuals and households. Two separate sets of questionnaires were administered in PSLM 2011-12 to gather information on wide range of topics including education, income, employment, migration and health at national and provincial level. Female`s questionnaire gather information from all females about their demographic and socio-economic information, health, reproductive health, pregnancy and maternity history (for married females 15-49 years of age), family planning etc. Male`s questionnaire gather information from all males about their demographic, socio-economic characteristics and on household expenditures. Being the information on migration and health expenditures, it is one of the most appropriate nationally

representative surveys that provides possibility to analyze the impact of remittances on health care expenditures of individuals.

The PSLM 2011-12 is one of the largest surveys covering a sample of about 17056 households. The sample size of 17,056 households distributed over 1217 PSUs (604 urban and 613 rural) has been considered sufficient to produce reliable estimates in respect of all provinces. Out of these 1217 PSUs, 59 PSUs (19 urban and 40 rural PSUs) were dropped and the remaining 1158 PSUs (585 urban and 573 rural) comprising 15807 households were covered. The distribution plan of PSUs and SSUs by province and region is as under. According to PSLM 2011-12; 861 are remittance receiving households which are 5.4 percent of the total households. Out of these total remittance receiving households 358 (41.6 percent) households from urban while 503 (58.4 percent) households belong to rural region.

During 2011-12, 7 percent of the total population reported sick or injured. 96 percent of the total sick or injured individuals had some health consultation, out of which 71 percent visited private dispensary/hospitals and only 22 percent availed public facilities (*i.e.*, dispensaries, hospitals, RHCs and BHUs).

Table 1: Sample Profile Of Population

| Province/ Area | Sample PSUs | | | Sample SSUs | | |
|--------------------|-------------|------------|-------------|-------------|-------------|--------------|
| | Urban | Rural | Total | Urban | Rural | Total |
| Punjab | 256 | 256 | 512 | 2935 | 4019 | 6954 |
| Sindh | 152 | 144 | 296 | 1802 | 2296 | 4098 |
| KPK | 88 | 120 | 208 | 1041 | 1913 | 2954 |
| Baluchistan | 68 | 96 | 164 | 811 | 1524 | 2335 |
| Total | 564 | 616 | 1180 | 6589 | 9752 | 16341 |

3.2. Method for Measuring Impacts

There are two types of experiments that are used in impact evaluation (a) experimental (b) non experimental method. In case of experimental method, there was unavailability of data therefore we use quasi-experimental method which is the main technique of non-experimental method. This method is mostly used in analysis of many remittances programs because non-experimental programs are comparatively cheap and easy to implement in impact-evaluation program (Smith & Todd, 2005).

3.3. Quasi-Experimental Method

Through the use of randomization procedure in the experimental study, the results produced for both the control and treatment groups is similar in portrayal of both observed and unobserved characteristics (Bryonet *al.*, 2002). Alternatively, the process of quasi-experiment tends to produce a related control group by enquiring: “what the treatment group may have done if the treatment was not done?” (Armendariz & Morduch 2005, 2010). Three key methods have been identified so far: (i) Before-After Difference Estimator (BA); (ii) Matching; (iii) Difference in Difference Estimator (DID). Since the matching estimator is convenient so this study uses this method.

3.4. The Methodological Framework

As discussed before that the main objective of the study is to examine the remittances’ impact on the expenditures of health care of the household. The health care expenditures are broadly classified as clinical expenditures and medicines expenditures. The study first analyzes the key factors that determine the receipt of remittances. The study has undertaken multivariate analysis to examine the relationship between receipt of

remittances and various characteristics. The multivariate analyses is comprised on binary logistic regression and the following equation has been used.

$$Rem_i = \alpha_0 + \alpha_1 I_i + \alpha_2 HH_i + \alpha_3 Rg_i + \varepsilon_i \dots \dots \dots (3.1)$$

In the above equation 3.1, dependent variable **Rem_i** indicates that whether the household i receiving remittances or not. On the right hand side of the equation, **I_i** is the vector of individual characteristics of head of household which include age, sex, and education. **HH_i** is a vector which represents the household characteristics like household size. **Rg_i** is a vector which represents all other controlled factors like region and province. Since the dependent variable **Rem_i** is dichotomous in nature with two outcomes 1 as receiving and 0 as not receiving therefore binary logistic regression model has been applied.

3.5. Methodology: A Note on Propensity Score Matching

A number of studies have analyzed the impact of remittances on health care expenditure Ponce *et al.* (2011), Valero-Gil (2008), Dorantes San (2009), but a major drawback with these studies is the potential biasness estimation. The main concern is that the remittances may affect selective regions and households rather than all the households. Here we called these households as the “treated” or “participants households”. Obviously remittances may affect the treated households positively; it may also contributes in raising the well-being of non-participants household, depending upon the nature of the project that how much it generates the spillover effects by transferring the knowledge from the participant unit to non-participant unit.

To check the impact of remittances, the difference in the outcome among the target and controlled group is measured, that is

$$ATT = E(Y | D = 1) - E(Y | D = 0) \dots \dots \dots (3.2)$$

ATT= Estimated Average Treatment-on-Treated effect

Y= is the outcome

D= 1 if individual are getting remittances

D=0 if the individual are not getting remittances

The observable characteristics if not controlled, may lead to bias ‘Overt bias’, which occurs if the observable characteristics are not the same. It can be eliminated by controlling observable (X_i) characteristics in estimating models (Lee, 2005), so the impact evaluation is now

$$ATT = E(Y | D = 1, X_i) - E(Y | D = 0, X_i) \dots \dots \dots (3.3)$$

Mosely (1997) identified the possibility of existence of hidden bias between the control group and treatment group. But with a randomized selection like the one used in design based studies the treatment and control groups, randomization allows us to eliminate the hidden bias by cancelling out the unobservable characteristics of both target group and control group.

One of the possible solutions to solve the selection biasedness problem is to find a comparison group that has the same observable characteristics like the treatment group, except for one that the comparison group was not included in the program (Rosenbaum & Rubin, 1983). Based on their propensity scores that is their predicted probabilities of receiving, the observed covariates among the comparison group and the treatment group are balanced. In short, PSM (Propensity Score Matching) also assures that the observed

characteristics of the comparison and the treatment groups are identical (Ravallion, 2003). The study conducted by the Dehejia and Wahba (2002) proposes in order to generate comparison group (control group) the matching chooses non-participants who have related observe characteristics (attributes) to participants. The rationale for this particular mechanism is that, a variable if effects only the participation but not the result, then it is not essential to control for differences with detail to this variable in the control groups versus the treatment. Likewise, if the variable does not impacts the treatment but only the consequence, then it is least important to control for that variable because of the fact that the consequences will not significantly be changed in the control versus treatment groups. Lastly, the variables that neither affects the result nor treatment are also visibly least relevant. Consequently, the only variables that effect both the outcome and treatment are essential for the matching and are encompassed in the probit model from which this study derive the propensity score.

If matching cannot completely control on unobserved attributes which automatically create selection bias and the reliability of the estimator becomes more sensitive due to selection bias (Smith & Todd, 2005). Propensity score matching (PSM) method is most widely used matching estimator.

The (PSM) method first estimates the propensity score for each contributor (remittances receiver) and non-contributor (remittances non-receiver) on the basis of observed features, and then compares mean outcome of participant with that of the matched non-participant. The aim of the PSM is to select remittances non-receiver households among all remittances non-receiver households to make a control group, and then compare the outcome of the treated and matched control group.

The essential supposition is that among remittances non-receiver, the ones possessing the same features with actual remittances are necessarily expected to have the same result as compared to what the remittances would have had without remittances receiver. This is commonly referred to as the conditional independence assumption (CIA) (Rosenbaum & Rubin, 1983). The major idea of the PSM method is to control the comparison and treatment units with the same propensity score and compared with mean estimated from comparison and treatment group (Dehejia & Wahba, 2002).

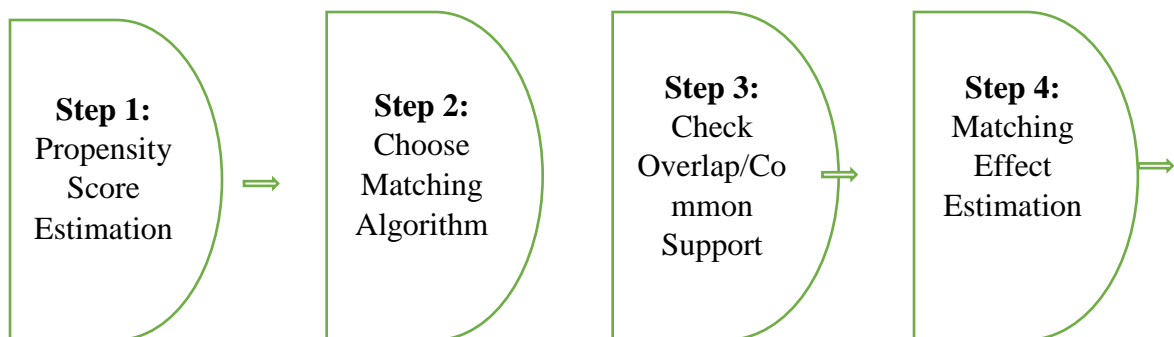
Dehejia and Wahba (2002) argue that PSM method is more efficient (with lower bias) if data given fulfills three essential conditions. (i) The sample drawn in same geographical location should be from both treatment and control group. (ii) The data should have been acquired from same questionnaire for comparison. (iii) The data set acquired and used for the study should contain a large set of variable related to modeling remittances participation and the consequences. The dataset used in the current thesis do met all these conditions.

Moreover observable features will minimize the bias of both control and treatment group that lead to increase the likelihood matched. PSM method is more applicable/feasible on a relatively small population subset between comparison and treatment group (Dehejia & Wahba 2002).

Bryon *et al.*, (2002) argue that selection bias occurs when the output is affected from few of the determinants of participation. In such situation selection bias can easily be avoided by simply adding the related variables in the equation to the explaining output. Since it has been found out that the exact propensity score is mysterious, and a Model-based estimation technique has been devised (Rosenbaum & Rubin, 1983).The multi-step

approach has mostly been used for probit model for the propensity score (1) choosing the influential covariates that differentiate the treatment and control groups the most; (2) encompassing the selected covariates and their interaction in a one-equation probit model for estimation of the propensity score, by using maximum likelihood method and (3) by the estimate propensity scores subclasses. This proposed method may contain the stepwise model selection, with repetition of the step (1) to step (3) till the neighboring treatment and treatment groups are achieved.

Figure 1: PSM - Implementation Steps



The control group and treatment group are different in characteristics in X variable. The difference in outcome cannot be recognized to the difference in the treatment. The solution will exist only similar characteristics across the two groups.

It is very easy to compute the effect of remittances on the probability of being in a situation of healthcare expenditure, once households have been matched in this manner. This effect takes the form of an Average Treatment on the Treated (ATT) effect, where the treatment is taken as whether a household receives remittances or not.

We estimate the propensity scores on the basis of the following model:

$$Rem_i = \alpha_0 + \alpha_1 I_i + \alpha_2 HH_i + \alpha_3 Rg_i + \varepsilon_i \dots \dots \dots (3.4)$$

There are three sets of explanatory variables on the right hand side of the model i.e. the major reasons that why a household may need remittances. These are (a) individual characteristics like household heads' gender, age of head, education of the head, age square of head, (b) household characteristics, for example household size (c) regional characteristics like provinces.

3.6. Variables

Medical Expenditures

In PSLM data, the information about medical expenditures has been reported as Annually Purchase of medicines and Vitamins, Medical apparatus, and other equipment or supplies and other health expenditures.

Clinical Expenditures

Clinical expenditures are reported as annually fees paid to doctors, specialists, Hakeem/Midwives outside the hospital. Hospital charges laboratory test etc are also included.

Total Health Care Expenditures

The present study classified the total health care expenditures as sum of medical as well as clinical expenditures. By combining the sum of medicines and clinical expenditures, we will get the total health expenses of remittances receiving households.

The Measurement of Remittances

The PSLM has detailed questions regarding domestic as well as foreign remittances receiving by household. The present study only takes the foreign remittances to see its

impact on health care expenditures. The question regarding the availability or unavailability of foreign remittances has been asked in section transfer paid out and received during last one year. Q). Remittances received from outside Pakistan. It has two outcomes, 1=yes (receiving), 0=no (not receiving).

Gender of Household Head

Gender of HH is an important variable to find out the inflow of remittances. Different studies have found a significant relationship between sex of HH head and inflow of remittances. In this study this variable has been taken in order to see the relationship between gender of household head and receipt/inflow of remittances that whether the majority of remittances-receiving household are female-headed or male-headed. It has two outcomes 1= male and 2=female.

Education of Household Head

Education is the most imperative variable among human capital variables to estimate the impact of remittances on health expenditures. It is the general impression that educated people may spend more portions of remittances on health expenditures as compared to non-educated or illiterate people. Various studies have shown that remittances-receiving household whose heads are educated will spend more on health expenditures as compared to illiterate HH heads because they know the importance of health and they are more conscious about health issues. In PSLM, the education of respondent has been asked as highest classed passed. The present study broadly classified them into five main categories namely illiterate, primary, middle, secondary and tertiary.

Household Size

Another important variable that is used in study is household size. It is expected that household with larger number of persons living in it will spend less proportion of remittances on health care expenditures as compared to household with comparatively less number of people. In PSLM the information regarding the total number of persons living in a household is given which has been considered useful for the present study.

Region

In this study, the separate analysis for rural and urban region has been carried out by keeping in view that region plays an important role in determining the health care expenditures of remittances receiving household. This variable is categorized as urban and rural areas whereas urban serve as reference category.

Summary

This chapter has described the methodological framework of the measurement of remittances and health care expenditures in Pakistan. The first part of the chapter has highlighted the features of data with detailed information about target sample. The second part has discussed the methodology to estimate the impact of remittances on health care expenditures alongwith the explanations of dependent and independent variables.

CHAPTER 4

EMPIRICAL RESULTS

In this chapter the empirical results of the study are discussed. The chapter is divided in two sections. In section 4.1 the empirical results for urban sample is presented for overall health care expenditure, medicine and clinical expenditure. In section 4.2 the results for rural sample are discussed in detail.

4.1. Impact of Remittances on Healthcare Expenditure (Urban Sample)

In the first step we estimate the propensity score, in which the estimation of the propensity is treated, where receiving remittances is the treatment. A value of 1 is assigned to the dependent variable if the international remittances are received by household and 0 otherwise. This specification uses following variables of the household head as explanatory variables: age linear, age squared, gender of the head (0 if women) and education level. It also includes household size as explanatory variable and Baluchistan set as references dummy when provincial variations are taken into account.

The two conditions that are balancing and un-confoundedness must be met to calculate the ATT, while the propensity scores are estimated using logistic regression. Then from these propensity scores that are the results of the observable characteristics, ATT effect will be estimated for the households having the same observable characteristics by applying various PSM specifications, Kernel matching and stratification matching. The results of the determinants of remittances are presented in bellow table 2 by including the correlates for which both of the above mentioned conditions are satisfied.

Table 2: Probit Estimation for Constructing the Propensity Scores to Estimate Impacts of Remittances on Urban Household.

| Variable | Coefficient | St. Error |
|--|--------------------|------------------|
| <i>Head Gender (Male=1)</i> | 1.288* | 0.070 |
| <i>Household Size</i> | 0.026* | 0.009 |
| <i>Education of Head (Illiterate as Reference)</i> | | |
| <i>Grade 1-5</i> | 0.051 | 0.094 |
| <i>Grade 6-8</i> | -0.015 | 0.104 |
| <i>Grade 9-10</i> | 0.186*** | 0.081 |
| <i>Grade 11 and above</i> | 0.111 | 0.079 |
| <i>Province (Baluchistan as Reference)</i> | | |
| <i>Punjab</i> | 0.659 | 0.155 |
| <i>Sindh</i> | -0.148 | 0.175 |
| <i>Khyber Pakhtunkhwa</i> | 0.787* | 0.157 |
| <i>Constant</i> | -3.915* | 0.202 |
| <i>LR² χ^2</i> | 523.91 | |
| <i>Prob > χ</i> | 0.000 | |
| <i>Observation</i> | 6743 | |

Note: * Significant at 1% ** significant at 5% ***significant at 10%;

Among 6743 households, there are 358 households get the remittances and 6385 households are not getting remittances.

The results of the logistic regression model are presented in the above table 2. The small p-value shows that at least one of the coefficients of regression is not equal to zero. Few explanatory variables are highly significant at 1 and 5 percent level. All the variables have the signs that were expected, for example the sex of household head coefficient is positive and significant which means that most of the households that receive remittances are headed by males. With reference to the education of household head, the results indicates that education of household head has a positive and insignificant sign except Grade (9-10). It shows that with the increase in the education level of household the dependency on remittances decreases. It could be because of the reason that the

household head may find employment at home. The finding postulates that household size has a significant positive coefficient depicting that with the increase in the household size, the probability of receiving remittances also increases.

Now regarding different matching techniques, the choice of the estimator crucially depends on the situation at hand. The performance of different matching estimators varies case-by-case and depends largely on the data structure at hand. If there are only few control observations, it makes no sense to match without replacement. On the other hand, if there are a lot of comparable untreated individuals it might be worth using more than one estimator for more precision in estimates. Now this brings the study to the final stage of PSM analysis.

To find out the impact of remittances on overall health care expenditure, medicine and clinical expenditure in urban areas of Pakistan, we used Average treatment on treated (ATT). The results are given in table 3. The findings show that ATT effects on overall healthcare expenditure is significantly positive in case of urban areas of Pakistan. The coefficient of ATT effect through Stratification method is 0.424 which means that remittances receivers are spending 42.4 percent more on overall healthcare expenditure as compared to non-remittances receivers. In case of kernel methods, the findings reveal that remittances receivers are spending 45.7 percent more on overall health expenditures compared to non-remittances receivers. Further, the number of control and treatment units are same in both cases. It means sample size in both cases remains the same.

The overall health care expenditure is disaggregated in medicine expenditure and clinical expenditure. It has been observed that ATT effect of remittances on medicine expenditure in urban areas of Pakistan are positive and highly significant at 1 percent

level in both cases of Stratification method as well as Kernel method. In case of Stratification method, coefficient shows that remittances-receivers belong to urban areas of Pakistan are spending 36.5 percent more on medicines as compared to non-remittances receivers. The results estimated by Kernel methods almost depict the same picture. In case of clinical expenditure, the ATT effects in stratification method shows that remittances-receivers belong to urban areas of Pakistan are spending 39.5 percent more on clinical expenditures as compared to non-remittances receivers. The number of control Treatment unit are 358 and control unit are 6284 and the T value is highly significant and at 1 percent level of significance. Moreover, the coefficient of Kernel matching is significant and positive which shows that Treatment units are spending 47.6 percent more as compared to number of control unit. Hence the results suggest that in urban areas, households expend more on clinical expenditure than medicine expenditure.

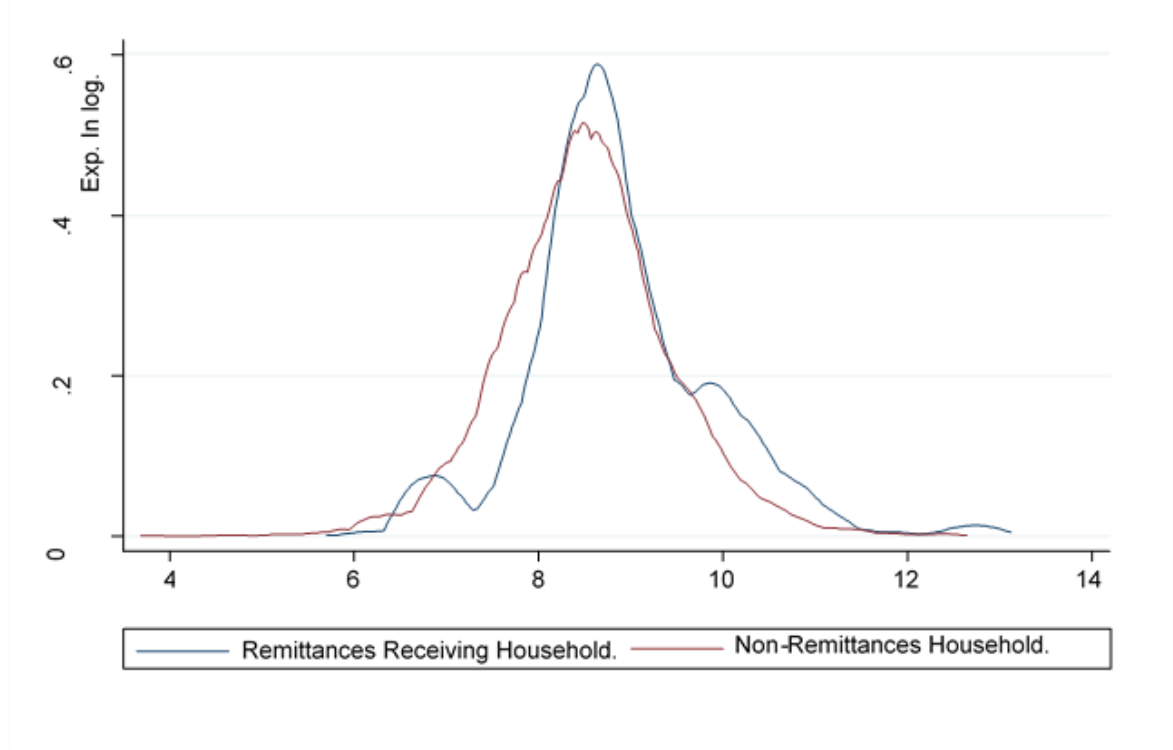
Table 3: ATT Effect of Remittances on Health Care, Medicine and Clinical Expenditure (Urban Sample)

| | <i>Health Care Expenditure</i> | | <i>Medicine Expenditure</i> | | <i>Clinical Expenditure</i> | |
|----------------------------|--------------------------------|----------------------|------------------------------|----------------------|------------------------------|----------------------|
| | <i>Stratification Method</i> | <i>Kernel Method</i> | <i>Stratification Method</i> | <i>Kernel Method</i> | <i>Stratification Method</i> | <i>Kernel Method</i> |
| ATT | 0.424* | 0.457* | 0.365* | 0.328* | 0.395* | 0.476* |
| No. Treated | 358 | 358 | 358 | 358 | 358 | 358 |
| No. Control | 6284 | 6284 | 6284 | 6284 | 6284 | 6284 |
| St. Error Bootstrap | 0.062 | 0.058 | 0.085 | 0.082 | 0.072 | 0.070 |
| T-value | 6.888 | 7.833 | 4.294 | 4.001 | 5.499 | 6.751 |

Bootstrapped standard error with 10,000 repetitions statistically significant at (10%)***, (5%)*, (1%)*

The following distribution shows that the overlap assumption is satisfied between treated and non-treated remittances.

Figure 1: Propensity of Scores for Remittance Receiver and Non-Receiver



The above figure 1 shows that two distributions are overlapping and the only overlap area of two distributions are useful because PSM use generate control group between two distribution overlap. It is the important assumption of PSM that two distributions should overlap so the present data fulfill this assumption. The most important in this analysis only those observation are used inside the overlap while outside the overlap, the data has been dropped. PSM focus only overlap between two distributions of treated and non-remittances receiver. The above distributions have been made through kernel density function.

In table 4, we balance the covariates between remittances receiver and non-receiver. We compare the covariates between treated and non-treated units. The findings show that

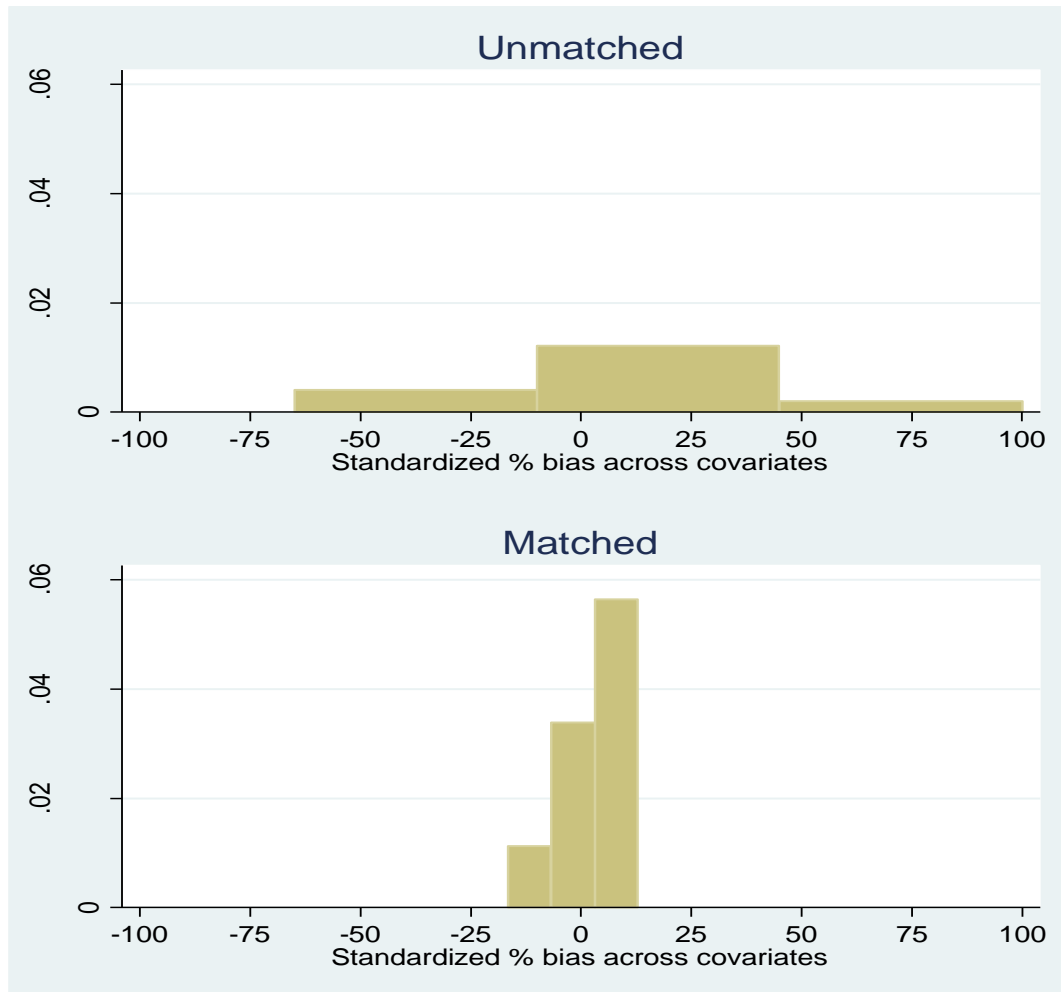
Head's Gender of mean treated and untreated is almost same and difference between two means is -0.002. Household size mean of untreated is greater than treated. Education of the head is negative standardize difference in all grades and the provinces difference is same and positive.

Table 4: Covariates between Treated and Non-Treated Units of Remittances Receiver and Non-Receiver

| Variable | Mean Treated | Mean Untreated | St. Difference |
|--|---------------------|-----------------------|-----------------------|
| <i>Head Gender (Male=1)</i> | 1.09 | 1.09 | -0.002 |
| <i>Household Size</i> | 6.02 | 6.56 | -0.156 |
| <i>Education of Head(Illiterate as References)</i> | | | |
| <i>Grade 1-5</i> | 0.12 | 0.14 | -0.042 |
| <i>Grade 6-8</i> | 0.08 | 0.12 | -0.112 |
| <i>Grade 9-10</i> | 0.19 | 0.21 | -0.007 |
| <i>Grade 11 and above</i> | 0.24 | 0.26 | -0.046 |
| <i>Punjab</i> | 0.46 | 0.44 | 0.046 |
| <i>Sindh</i> | 0.30 | 0.28 | -.046 |
| <i>Khyber Pakhtunkhwa</i> | 0.18 | 0.28 | 0.046 |

Now the covariates bias of match and un-match is presented graphically for the simple understanding. The graph 2 clearly explicit that bias in unmatched is higher as compared to bias in matching unit. Now, we present the following table of before matching bias and after matching bias which is easy to understand the result in both scenarios.

Figure 2: Standardized Percentage Bias across Covariates (Urban Sample)



In the below table 5, it has been shown that bias is 100 percent in Head’s gender in before matching but after matching it reduced to 5 percent. In household size bias reduce is 14.1 percent and education or grade category grade 1-5, grade 6-8, grade 9-10 and grade 11 and above, the reduce bias are -13.8, 97.4,-185.9 and 82.9 respectively. Regarding province dummies, reduce bias of Punjab Sindh and KPK respectively is 85.5, 74.5 and 60.6 percent respectively. Now we present this analysis graphically.

Table 5: Biasness between Matched and Unmatched Variables in Urban Sample

| Variable | Unmatched/Matched U/M | Mean | | %Bias | Reduce Bias |
|---|--------------------------|---------|---------|-------|----------------|
| | | treated | Control | | |
| <i>Head Gender (Male=1)</i> | U | 1.460 | 1.066 | 100 | 94.2 |
| | M | 1.459 | 1.436 | 5.8 | |
| <i>Household Size</i> | U | 6.366 | 6.577 | -6 | 14.1 |
| | M | 6.370 | 6.188 | 5.2 | |
| <i>Education of Head (Illiterate as References)</i> | | | | | |
| <i>Grade 1-5</i> | U | 0.123 | 0.136 | -3.9 | -13.8 |
| | M | 0.123 | 0.138 | -4.5 | |
| <i>Grade 6-8</i> | U | 0.089 | 0.117 | -9 | 97.4 |
| | M | 0.090 | 0.090 | -0.2 | |
| <i>Grade 9-10</i> | U | 0.207 | 0.196 | 2.6 | -185.9 |
| | M | 0.204 | 0.175 | 7.3 | |
| <i>Grade 11 and above</i> | U | 0.218 | 0.262 | -10.3 | 82.9 |
| | M | 0.218 | 0.211 | 1.8 | |
| <i>Province (Baluchistan as Reference)</i> | | | | | |
| <i>Punjab</i> | U | 0.428 | 0.598 | 34.4 | 85.5 |
| | M | 0.597 | 0.572 | 5 | |
| <i>Sindh</i> | U | 0.059 | 0.294 | -64.9 | 74.5 |
| | M | 0.059 | 0.119 | -16.6 | |
| <i>Khyber Pakhtunkhwa</i> | U | 0.321 | 0.180 | 32.9 | 60.6 |
| | M | 0.321 | 0.268 | 13 | |

The below graph clearly shows the difference between before and after matching for all variables that have been used in the analysis.

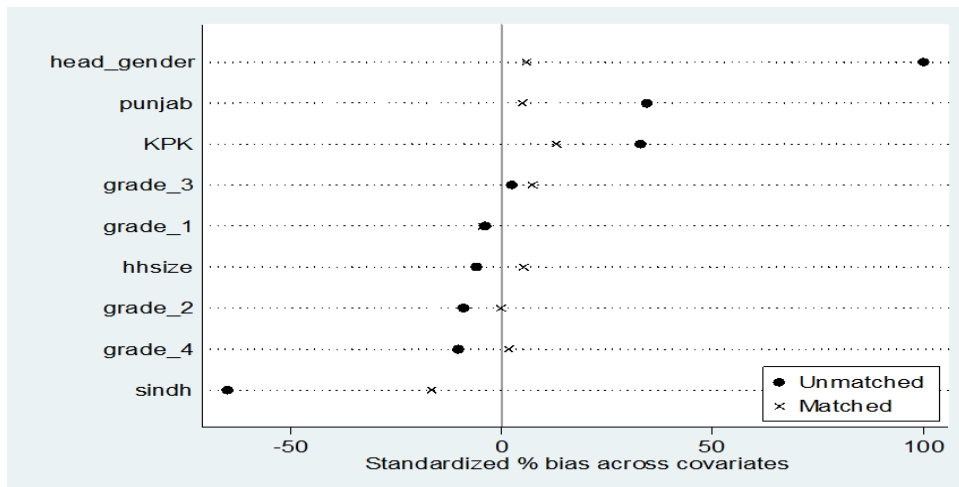


Figure 3: Standardized Difference between Matched and Unmatched Variables

4.2. Impact of Remittances on Healthcare Expenditure (Rural Sample)

In the first step we estimate the propensity score, in which the estimation of the propensity to be treated, where receiving remittances is the treatment. A value of 1 is assigned to the dependent variable if the international remittances are received by household and 0 otherwise. This specification uses following variables of the household head as explanatory variables: age linear, age squared, gender of the head (0 if women) and education level. It also includes household size as explanatory variable and Baluchistan set as references dummy when provincial variations are taken into account.

The two conditions that are balancing and un-confoundedness must be met to calculate the ATT, while the propensity scores are estimated using logistic regression. Then from these propensity scores that are the results of the observable characteristics, ATT effect will be estimated for the households having the same observable characteristics by applying various PSM specifications, Kernel matching and stratification matching.

The below table 6 shows the results calculated from logistic regression to analyze the impact of remittances on rural household. The small p-value shows that at least one of the coefficients of regression is not equal to zero. Like in urban areas analysis, all the variables have the signs that were expected, for example the sex of household head coefficient is significant and is negative which means that amongst most of the households that receive remittances, the percentage of women are more. Then comes the household size with a significant positive coefficient depicting that with the increase in the household size the probability of remittances received increases.

The coefficient of age of the household head is revealing that with the increase in the age of the household head, the likelihood to receive remittances also decreases. The

coefficients of education of HH head is positive only for grade 1-5. the education of head of household coefficients is negative and insignificant in all education categories except grade 11 and above in which the coefficient is negative and significant. It shows that there is negative relationship between education and likelihood to receive remittances. We can say that higher education decrease dependency on remittance and person may get employment at domestic level.

Table 6: Probit Estimation for Constructing the Propensity Scores to Estimate Impacts of Remittances on Rural Household

| Variable | Coefficient | St. Error |
|---|-------------|-----------|
| <i>Head Gender (Male=1)</i> | -1.116* | 0.629 |
| <i>Household Size</i> | 0.056* | 0.007 |
| <i>Age of the Head (in Log)</i> | 0.180*** | 0.100 |
| <i>Age of Head*Gender</i> | 0.001* | 0.0003 |
| <i>Education of Head (Illiterate as References)</i> | | |
| <i>Grade 1-5</i> | 0.003 | 0.101 |
| <i>Grade 6-8</i> | -0.078 | 0.145 |
| <i>Grade 9-10</i> | -0.204 | 0.175 |
| <i>Grade 11 and above</i> | -0.470** | 0.079 |
| <i>Province (Baluchistan as Reference)</i> | | |
| <i>Punjab</i> | 0.675* | 0.146 |
| <i>Sindh</i> | -0.509* | 0.208 |
| <i>Khyber Pakhtunkhwa</i> | 1.070* | 0.145 |
| <i>Constant</i> | -3.915* | 0.202 |
| <i>LR² χ²</i> | 798.93 | |
| <i>Prob> χ</i> | 0.000 | |
| <i>Observation</i> | 9064 | |

Note:* Significant at 1% ** significant at 5% ***significant at 10%;

Among 9064 households, there are 503 households get the remittances and 8561 households are not getting remittances.

Now to find out the impact of remittances on medicine expenditure in rural areas of Pakistan, we use Average treatment on treated (ATT). The results of ATT are given in

table 7. The results show that overall ATT effects on healthcare expenditure is positive in case of rural areas of Pakistan. The coefficient of ATT effect through Stratification method is positive and significant which shows that overall healthcare expenditure (Sum of clinical and medicine expenditure) 35.9 percent are better who is getting the remittances as compared to non-remittances receiver in case of Stratification method and 42.8 percent are better in case of Kernel matching method. It means both coefficients are significant at 1 percent level. Furthermore, the number of controls and treatment units are same in both cases. It means sample in both cases are not dropped except one sample drop in both case.

Now in case of clinical expenditure, the results are similar to the above results. The coefficients estimated through stratification method as well as Kernel method are positive and highly significant. In case of stratification method, the findings reveal that the remittances-receivers belong to rural areas of Pakistan are spending 46.6 percent more on clinical expenditures as compared to non-remittances receivers. Regarding ATT effect by using Kernel methods, it has been shown that remittances receivers are spending 54.1 percent more on clinical expenditures as compared to non-remittances receivers. These findings represent that remittances-receivers belong to rural areas are spending more on clinical expenditures as compared to urban remittances receivers.

In case of medicine expenditure, the coefficients estimated from both stratification as well as Kernel method are positive and significant at 5 percent level. In case of Stratification method, coefficient shows that remittances receivers belong to rural areas of Pakistan are spending 9.9 percent more on medicines as compared to non-remittances receivers whereas, by using Kernel method, the findings depicts that remittances

receivers are spending 13.5 times more on medicines compared with the non-remittances receivers. The result clearly shows that remittances-receivers belong to rural areas of Pakistan are spending more on medicines as compared to non-remittances receivers.

The number of control Treatment unit are 502 and control unit are 7835 and the T value is highly significant and at 1 percent level. The treatment and control units are approximately (dropping one sample in kernel and one sample in stratification) same in kernel matching method which means that both methods did not drop sample in this analysis. Moreover, the coefficient of Kernel matching is significant and positive which shows that Treatment units are spending 54.1percent more as compared to number of control unit.

Table 7: ATT Effect of Remittances on Health Care, Medicine and Clinical Expenditure (Rural Sample)

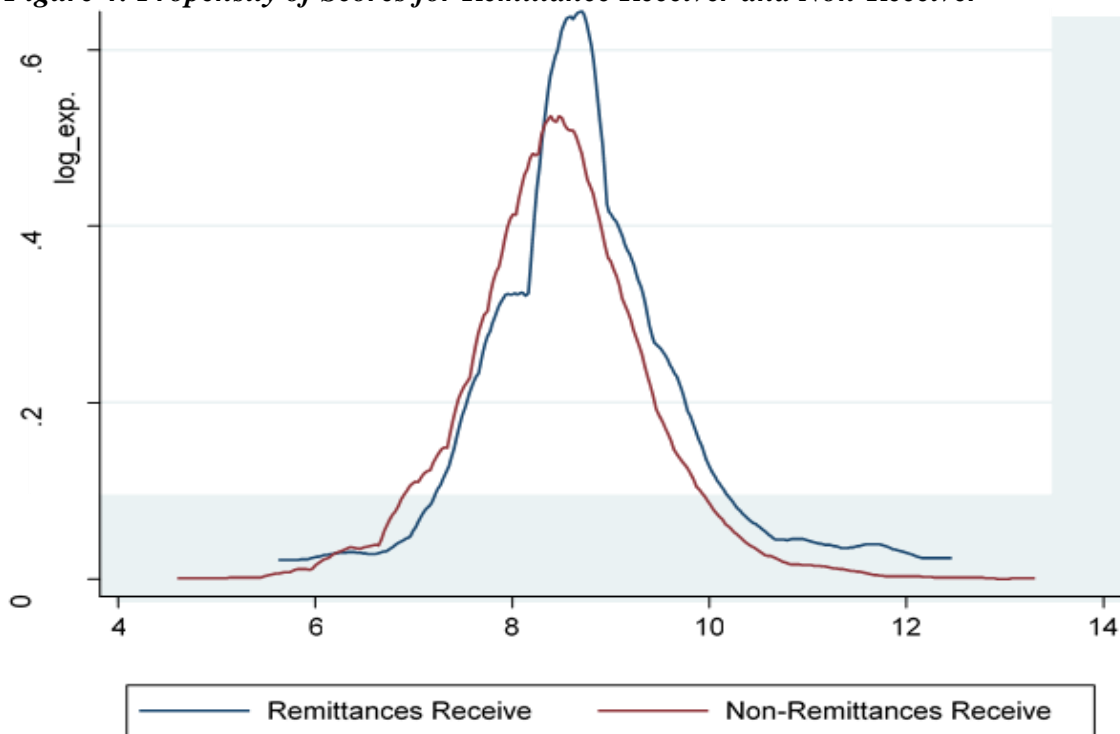
| | <i>Health Care Expenditure</i> | | <i>Medicine Expenditure</i> | | <i>Clinical Expenditure</i> | |
|----------------------------|--------------------------------|----------------------|------------------------------|----------------------|------------------------------|----------------------|
| | <i>Stratification Method</i> | <i>Kernel Method</i> | <i>Stratification Method</i> | <i>Kernel Method</i> | <i>Stratification Method</i> | <i>Kernel Method</i> |
| ATT | 0.359* | 0.428* | 0.099*** | 0.135*** | 0.466* | 0.541* |
| No. Treated | 502 | 502 | 502 | 502 | 502 | 502 |
| No. Control | 7835 | 7835 | 7835 | 7835 | 7835 | 7835 |
| St. Error Bootstrap | 0.046 | 0.045 | 0.068 | 0.069 | 0.059 | 0.058 |
| T-value | 7.771 | 9.417 | 1.897 | 1.967 | 7.889 | 9.377 |

Bootstrapped standard error with 10,000 repetitions statistically significant at (10%)***; (5%)**; (1%)*

Now the following distribution shows that the overlap assumption is satisfied between treated and non-treated remittances. In the below figure 4, two distributions are

overlapping and the only overlap area of two distributions are useful because PSM use generate control group between two distribution overlap. It is the important assumption of PSM that two distributions are overlaped. So this study`s data fulfill the assumption of PSM. The most important thing in this analysis is that only those observation are used inside the overlap while outside the overlap the data has been dropped. PSM focuses only overlap between two distributions of treated and non-remittances receiver. The above distribution have been made through kernel density function.

Figure 4: Propensity of Scores for Remittance Receiver and Non-Receiver



In table 8, we balance the covariate between treated and non-treated units. In the above table, Head's Gender of mean treated and untreated is almost same and Difference between two mean is -0.028. Household size mean of treated is greater than untreated. Education of the head is negative standardize difference in all grades except last grade of

education and the provinces difference is also different. Interaction term difference is 0.027 and log age standardize difference is -0.027.

Table 8: Covariates between Treated and Non-Treated Units of Remittances Receiver and Non-Receiver in Rural Sample

| Variable | Mean Treated | Mean Untreated | St. Difference |
|---|---------------------|-----------------------|-----------------------|
| <i>Head Gender (Male=1)</i> | 0.89 | 0.90 | -0.028 |
| <i>Household Size</i> | 7.12 | 6.87 | 0.061 |
| <i>Age of the Head (in Log)</i> | 3.76 | 3.77 | -0.027 |
| <i>Age of Head*Gender</i> | 170.53 | 164.74 | 0.027 |
| <i>Education of Head (Illiterate as References)</i> | | | |
| <i>Grade 1-5</i> | 0.12 | 0.17 | -0.137 |
| <i>Grade 6-8</i> | 0.10 | 0.10 | -0.028 |
| <i>Grade 9-10</i> | 0.10 | 0.12 | -0.062 |
| <i>Grade 11 and above</i> | 0.12 | 0.09 | 0.129 |
| <i>Province (Baluchistan as Reference)</i> | | | |
| <i>Punjab</i> | 0.45 | 0.44 | 0.019 |
| <i>Sindh</i> | 0.24 | 0.25 | -0.044 |
| <i>Khyber Pakhtunkhwa</i> | 0.25 | 0.22 | 0.061 |

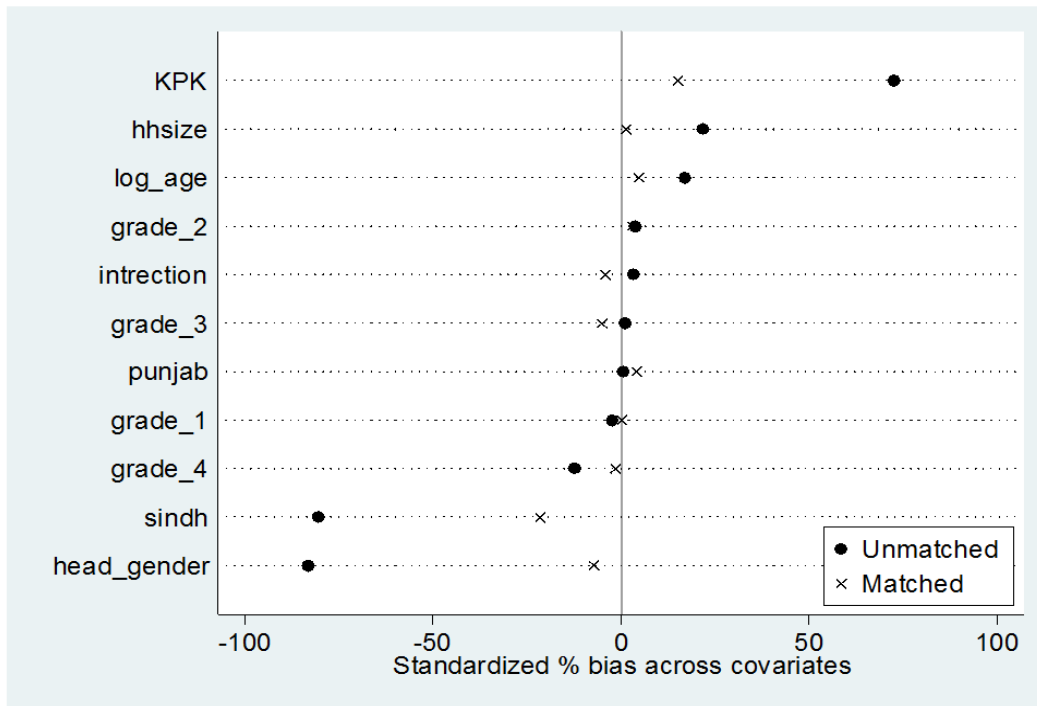
Now we present before matching bias and after matching bias in table 9. Table 9 shows that bias is -83.2 percent in Head gender in before matching but the after matching bias is -7.3 remaining percent. In household size bias reduce is 93.6 percent and a 72.7 percent bias reduce in age of head after matching and education or grade category grade 1-5, grade 6-8, grade 9-10 and grade 11 and above bias reduce respectively is 94.1, 20,-376.3 and 87.4. Interaction term bias is reduced 28.4. For province dummies bias reduce in percentage of Punjab, Sindh and KPK respectively is 603, 73.2 and 79.3.

Table 9: Biasness between Matched and Unmatched Variables in Rural Sample

| Variable | Unmatched/Matched U/M | Mean | | %Bias | Reduce Bias |
|---|--------------------------|---------|---------|-------|----------------|
| | | treated | Control | | |
| <i>Head Gender (Male=1)</i> | <i>U</i> | 0.386 | 0.918 | -83.3 | 91.2 |
| | <i>M</i> | 0.389 | 0.618 | -7.3 | |
| <i>Household Size</i> | <i>U</i> | 7.683 | 6.824 | 21.7 | 93.6 |
| | <i>M</i> | 7.323 | 7.270 | 1.4 | |
| <i>Age of the Head (in Log)</i> | <i>U</i> | 3.826 | 3.769 | 17.1 | 72.7 |
| | <i>M</i> | 3.834 | 3.818 | 4.7 | |
| <i>Age of Head*Gender</i> | <i>U</i> | 171.1 | 164.09 | 3.2 | -28.4 |
| | <i>M</i> | 163.19 | 172.19 | -4.1 | |
| <i>Education of Head (Illiterate as References)</i> | | | | | |
| <i>Grade 1-5</i> | <i>U</i> | 0.139 | 0.168 | -2.3 | 94.1 |
| | <i>M</i> | 0.167 | 0.167 | 0.1 | |
| <i>Grade 6-8</i> | <i>U</i> | 0.113 | 0.104 | 3.7 | 20 |
| | <i>M</i> | 0.111 | 0.102 | 3 | |
| <i>Grade 9-10</i> | <i>U</i> | 0.123 | 0.122 | 1.1 | -376.3 |
| | <i>M</i> | 0.103 | 0.122 | -3.1 | |
| <i>Grade 11 and above</i> | <i>U</i> | 0.038 | 0.090 | -12.3 | 87.4 |
| | <i>M</i> | 0.064 | 0.069 | -1.6 | |
| <i>Province (Baluchistan as Reference)</i> | | | | | |
| <i>Punjab</i> | <i>U</i> | 0.439 | 0.436 | 0.6 | -603 |
| | <i>M</i> | 0.419 | 0.398 | 4.2 | |
| <i>Sindh</i> | <i>U</i> | 0.010 | 0.268 | -80.4 | 73.2 |
| | <i>M</i> | 0.015 | 0.084 | -21.3 | |
| <i>Khyber Pakhtunkhwa</i> | <i>U</i> | 0.333 | 0.203 | 72.6 | 79.3 |
| | <i>M</i> | 0.364 | 0.498 | 30 | |

Now we present this analysis graphically. Graph 5, clearly shows the difference between before and after matching for all variables used in the analysis.

Figure 5: Standardize Difference between Matched and Unmatched Variables in Rural Sample



CHAPTER 5

CONCLUSION AND POLICY RECOMMENDATIONS

5.1. Conclusion

The objective of this study is to analyze the impact of remittances on the total household's expenditures on the health care. The household total health expenditures are classified into two broad categories; total expenditures on clinical services and total expenditures on the medicines. The two subgroups are estimated against two different levels of regional characteristics which are urban and rural areas. To deal with the selection biasedness issue, the technique of Propensity Score Matching (PSM) is applied to the data of Pakistan Social and Living Standard Measurement Survey (PSLM) of 2011-12.

The results suggest that the expenditures for medicines and expenditures for visits to the laboratory services are high for the receivers of remittances as compared to the non-receivers. This positive relationship is statistically significant for both subgroups of receivers of remittances in rural and urban areas. This may be due to the fact that the receipt of the remittances increase the budgetary income of households which then prefer to pay for the more radical health care services and their total expenditures on health become high than non-receivers of the remittances.

For the receivers of remittances, the expenditures for the clinical services and laboratories are high as compared to the medicine expenditures. This positive relationship are also statistically significant for both subgroups of receivers of remittances. The receipt of the remittances may increase the budgetary income of the family and instead of hasty use of

medicine by pharmacists, the household then chooses to contact the doctor, after complete laboratory tests, which causes more clinical expenditures. The higher expenditures on clinical services may be important in the preventive nature of the health outcome, therefore the transfer of remittances are beneficial for the receiving family in total health care expenditures, and can be contributed especially to the rural households for which there is inadequate availability of the laboratories and clinical services.

To tackle down unbiasedness, the balancing and overlapping assumption is pre-requisite for the PCM technique. In this study, these assumptions are fulfilled thus the conditions and results truly reflect the effects of remittances income on medicine and clinical expenditure as well as overall spending in both groups (Rural and Urban) in Pakistan. The remittances decrease with high level of education, which is likely because a highly educated head of the household rely less for the remittances to cover their expenses, rather may get a job in its home country. Women are likely the major recipients of the remittances, age of the head of household has negative relation with receiving remittances, while increase in the size of household likely cause a growth in receipt of remittances.

5.2. Policy Recommendations

This study concludes that there is a positive and statistically significant effect of remittances on health care expenditures. The receivers of remittances pay more for the medicines and laboratories. Based on the importance of the conclusion drawn, there are some key roles contributed by the remittances in providing better health, which are recommended here to be focused by the policy makers in devising policies for the migrants.

- In light of the importance of the remittances in the health care expenditure, it is recommended that the Government regulate Banks for minimal charges on international wire transfers
- Larger being the remittances, the more laboratory tests and clinical visits instead of medicines, which shows betterment in the health status due to the preventive nature of the health outcome. Despite the fact, the higher clinical expenditure is also indicative that clinical services (laboratories and consultancies) are costly in Pakistan. Therefore, the government should regulate clinical service providers for quality and user fees.

REFERENCES

- Abbas, K., Sabir, H. M., Shehzadi, A., & Abbas, Q. (2014). Impact of Workers' Remittances on Household Welfare in District Jhang (A Case Study of Tehsil 18 Hazari). *Journal of Finance and Economics*, 2(4), 131-135.
- Acosta, P. A., Fajnzylber, P., & Lopez, H. (2007). The impact of remittances on poverty and human capital: evidence from Latin American household surveys. *World Bank Policy Research Working Paper*, (4247).
- Adams, R. H., & Page, J. (2005). Do international migration and remittances reduce poverty in developing countries?. *World development*, 33(10), 1645-1669.
- Ahmad, N., Khan, Z. U., & Atif, M. (2012). Econometric Analysis of Income, Consumption and Remittances in Pakistan: Two Stage Least Square Method. *Journal of Commerce (22206043)*, 4(4).
- Amuedo-Dorantes, C., & Pozo, S. (2011). New evidence on the role of remittances on healthcare expenditures by Mexican households. *Review of Economics of the Household*, 9(1), 69- 98.
- Amuedo-Dorantes, C., Sainz, T., & Pozo, S. (2007). *Remittances and healthcare expenditure patterns of populations in origin communities: evidence from Mexico (Working Paper ITD= Documento de Trabajo ITD; 25)*. BID-INTAL.
- Arif, G. M. (2004). Effects of overseas migration on household consumption, education, health and labour supply in Pakistan. *International Labour Migration from South*

Asia, Institute of Developing Economies and Japan External Trade Organization, Chiba, Japan.

Baldé, Y. (2009). *Migrants' remittances and economic growth in Sub-Saharan Africa*. Mimeo.

Bilquees, F., & Hamid, S. (1981). Impact of international migration on women and children left behind: a case study of a Punjabi village.

Cassarino, J. P. (2004). Theorising return migration: The conceptual approach to return migrants revisited. *International Journal on Multicultural Societies (IJMS)*, 6(2), 253-279.

Caliendo, M., & Kopeinig, S. (2008). Some practical guidance for the implementation of propensity score matching. *Journal of economic surveys*, 22(1), 31-72.

Clement, M. (2011). Remittances and household expenditure patterns in Tajikistan: A propensity score matching analysis. *Asian Development Review*, 28(2).

Dehejia, R. H., & Wahba, S. (2002). Propensity score-matching methods for nonexperimental causal studies. *Review of Economics and statistics*, 84(1), 151-161.

Drabo, A., & Ebeke, C. (2010). Remittances, public health spending and foreign aid in the access to health care services in developing countries.

Frank, R., Palma-Coca, O., Rauda-Esquivel, J., Olaiz-Fernández, G., Díaz-Olavarrieta, C., & Acevedo-García, D. (2009). The Relationship between remittances and health care provision in Mexico. *American journal of public health*, 99(7), 1227.

- Göbel, K. (2013). Remittances, expenditure patterns, and gender: parametric and semiparametric evidence from Ecuador. *IZA Journal of Migration*, 2(1), 1-9
- Groot, W., & van den Brink, H. M. (2006). 4. A. What does education do to our health?
- Grossman, M. (1972). On the concept of health capital and the demand for health. *The journal of political economy*, 223-255.
- Hildebrandt, N., McKenzie, D. J., Esquivel, G., & Schargrodsky, E. (2005). The effects of migration on child health in Mexico..*Economia*, 257-289
- Hotchkiss, D. R., Rous, J. J., Karmacharya, K., & Sangraula, P. (1998). Household health expenditures in Nepal: implications for health care financing reform. *Health policy and planning*, 13(4), 371-383.
- Ilahi, N., & Jafarey, S. (1999). Guestworker migration, remittances and the extended family: evidence from Pakistan. *Journal of Development Economics*, 58(2), 485-512.
- Kalaj, E. H. (2015). A Micro-level Analysis of the Effect of Remittances on Health Expenditures: Evidence from Albania. *Mediterranean Journal of Social Sciences*, 6(1 S1), 665.
- Kea, X., Saksena, P., & Hollyb, A. (2011). The determinants of health expenditure: a country-level panel data analysis. WHO-RDI, December.
- Lindstrom, D. P., & Munoz-Franco, E. (2006). Migration and maternal health services utilization in rural Guatemala. *Social Science & Medicine*, 63(3), 706-721.

- Lucas, R. E., & Stark, O. (1985). Motivations to remit: Evidence from Botswana. *The Journal of Political Economy*, 901-918.
- Mosley, P. (1997). *The use of control groups in impact assessment for microfinance*. Department of Economics and Department of Agricultural Economics, University of Reading.
- Ponce, J., Olivie, I., & Onofa, M. (2011). The Role of International Remittances in Health Outcomes in Ecuador: Prevention and Response to Shocks¹. *International Migration Review*, 45(3), 727-745.
- Qayyum, A., Javid, M., & Arif, U. (2008). Impact of remittances on economic growth and poverty: evidence from Pakistan.
- Rapoport, H., & Docquier, F. (2006). The economics of migrants' remittances. *Handbook of the economics of giving, altruism and reciprocity*, 2, 1135-1198.
- Rosenbaum, P. R., & Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, 70(1), 41-55.
- Smith, J. A., & Todd, P. E. (2005). Does matching overcome LaLonde's critique of nonexperimental estimators?. *Journal of econometrics*, 125(1), 305-353.
- Tomini, S., & Maarse, H. (2011). How do patient characteristics influence informal payments for inpatient and outpatient health care in Albania: Results of logit and OLS models using Albanian LSMS 2005. *BMC Public Health*, 11(1), 375.
- TOOR, I. A., & BUTT, M. S. (2005). Determinants of Health Care Expenditure in Pakistan. *Pakistan Economic and Social Review*, 133-150.

Valero-Gil, J. (2008). Remittances and the Household's Expenditures on Health.

Zweifel, P., Breyer, F., & Kifmann, M. (2009). *Health economics*. Springer Science & Business Media.