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Role of Gender in Household Health Expenditure Allocation in Pakistan

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Abstract

In this study, gender patterns in allocation of health expenditure have been investigated for Pakistan. Using Household Integrated Expenditure Survey (HIES) data for the year 2010-11, the conventional Engel curve as well as the Hurdle Methodology have been employed to detect gender biasness. Gender discrimination has been studied at three decision stages: reporting sick, consulting medical practitioners, and incurring positive medical expenditure. Results indicate that the nature of discrimination varies by age cohort and type of health seeking behaviour. There is a pro-female bias among women above the age of 40 in health expenditure allocation and a pro-male bias in consulting a doctor in working age group (26-40). These results reflect the possibility that females above 40, in Pakistan, are in general more likely to develop severe sickness and thus incur higher medical expenditure. The results also reveal an interesting reversal of the pro-male bias in health expenditure that is present for younger age cohorts particularly in the working age sample. Additionally, there is variation in the likelihood of consulting a doctor in younger age group in rural areas and lower income group.

Keywords: Health Expenditure, Gender Discrimination, Hurdle Model, Pakistan

1. INTRODUCTION

This study examines evidence of gender discrimination in health-seeking behaviour within households of Pakistan. The welfare of household members can vary substantially depending on resource allocation behaviour. The existence of a rich literature has evoked interest in understanding the issue

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of gender discrimination in resource allocation at the household level in developing economies (see Alderman and Gertler, 1997; Alderman and King, 1998; Deaton, 1989; Subramanian, 1996). Male members receive preference in terms of human capital investments particularly in the South Asian context as many households allocate a larger part of their resources towards them (see Sen and Sengupta, 1983; Subramanian and Deaton, 1991). Intra-household gender differences pertaining to educational and health expenditures have been a concern for many researchers recently (see Azam and Kingdon, 2013; Gao and Yao, 2006; Khanal, 2018; Zimmermann, 2012).

Several factors have been identified to explain gender differences within households but the investment motive is one of the more prominent explanations. Earlier studies on gender discrimination have been highly influenced by investment motive hypothesis initially proposed by Rosenzweig and Schultz (1982). Investment motive hypothesis implies that households are inclined to devote human capital investments on males because parents aim to maximize their returns on investment in their children. In both developed and developing countries, the expected labour market returns for males are better than females. Alderman and King (1998) further added that parents recognize that only male children will transfer cash to parents in their old age.

Some researchers believe that human capital investments are based on productivity of the individual household members. Gao and Yao (2006) highlighted that prime-aged men have higher opportunity cost of visiting a doctor and the relative cost increases with the relative market value of a family member. In a similar context, Mangyo (2008) incorporated various demographic groups and found nutrient-intake elasticity with respect to total household food consumption to be lower for prime-age men than for other demographic groups.

The relative bargaining power of household members also determines the distribution of resources within households. Literature suggests that as the mothers' bargaining power strengthens, they allocate a greater share of financial resources to activities that promote human capital formation such as education and medical expenditure (see Song, 2008; Khalid and Khan, 2012). Song (2008) elaborates that a mother's higher bargaining power does not reduce gender discrimination; young boys are preferred over young girls in terms of medical care or education expenditures.

The issue of gender bias within households has been mainly examined along the dimensions of education, food, and health expenditures. Earlier studies, while studying the gender pattern in the allocation of resources within households, have focused more on the consumption expenditure. Most studies (Deaton, 1989; Subramanian and Deaton, 1991) looked at household level consumption expenditure data to examine the presence of gender discrimination. In this setting, Mangyo (2007) analyzed how changes in household per capita nutrient intake affect the intra-household allocation of nutrients. He estimates how the nutritional intakes of individuals from different age groups and sex respond to changes in total household food. Gender bias in terms of education expenditures within households has been extensively studied (Kingdon, 2002; Kingdon, 2005; Kingdon and Aslam, 2008; Himaz 2010). According to Ray (2000), education is the principal item exhibiting gender bias in household spending in South Asia, instead of food or nutrition. A relatively recent study by Khanal (2018) has also found parental expenditure patterns in education to be discriminatory in case of Nepal.

Pakistan ranks 130th out of 159 countries in terms of the Gender Inequality Index (GII) which is much lower as compared to other countries. The index is constructed by United Nations Development Programme (2015), that captures inequality between women and men along three dimensions (reproductive health, empowerment, and the labour market). Empirical analysis of gender discrimination needs to be studied in detail at both micro and macro levels for Pakistan. Very little empirical work has been done to analyze the household level gender discrimination in human capital investment particularly in health care utilization behaviour in Pakistan to the researcher's knowledge.

Existing literature relevant to Pakistani setting encompasses discrimination in food expenditure, education, school enrolments, and healthcare. Deaton (1997) first studied the allocation of consumption expenditure in case of Pakistan. Alderman and Gertler (1997) have found that demand for medical care is more income elastic for girls than males in Pakistan**.** Hazarika (2000) found that male preference exists in access to healthcare and not nutrition in the case of children in Pakistan. However**,** Ali (2000) has found no evidence of gender discrimination in children in reporting sickness and health care utilization by employing a different dataset. Kingdon and Aslam (2006) observed pronounced discrimination against girls, in terms of spending on schooling in Pakistan. Yusuf (2013) documents pro-male bias in school level enrolment in rural domain of Punjab, Pakistan. In light of the above researches, the present study investigates the prevalence of gender discrimination in household health expenditure in Pakistan.

One limitation in modeling health expenditure using traditional estimation approaches such as OLS is that data is characterized by zero or non-zero values. In order to overcome this factor, the two-part models and the generalized linear models have been employed as viable alternatives (see Gao and Yao, 2006; Matsaganis, Mitrakos and Tsakloglou, 2009). The two-part model has been estimated for multivariate analysis by Gao and Yao (2006). The first model is the unconditional probability of getting treatment and the second model is the probability of incurring positive expenditures. In the last model, the dependent variable is the logarithm of the amount of curative expenditure.

Deaton's Engel curve methodology has also been frequently used to study gender discrimination while examining household allocation behaviour. The study by Kingdon and Aslam (2006) demonstrates that the Engel curve has failed to pick up a gender bias in schooling expenditure in India. The Hurdle methodology was proposed to evaluate not only the gender bias but also the channels of gender biasness. The Hurdle Model has been carried out in two stages by Kingdon and Aslam (2006); in the first, it estimates the probability that the household spends anything on education; and in the second, it estimates the natural log of educational expenditure conditional on positive spending. Recently, Irving and Kingdon (2008) also adopted the hurdle methodology to explore gender bias health expenditure allocation in South Africa.

Intra-household differences in human capital investment is a prominent phenomenon in resource constrained settings, as discussed earlier. While numerous studies have examined health and education expenditure on children, it is worth investigating differential patterns of health expenditure and behaviour across genders for older age cohorts in the case of Pakistan**.** This will highlight the specific demographic for which a bias is most pronounced and provide insight into household resource allocation decisions. Specifically, this study will test whether investment value hypothesis applies at certain ages, given the differing roles and perceived contributions of men and women in a household. Based on the previous researches, the researcher will employ the Hurdle methodology to identify the channels of bias. The results from the Hurdle Model will be compared with conventional Engel curve approach, to accurately study the extent of biasness. However, the study will be restricted to household level, as expenditure data cannot be disaggregated at an individual level. Furthermore, the comparison between urban and rural households will also be carried out to deeply understand how factors that impact the decision level in allocating resources differ between two regions. Finally, the analysis will be conducted for poor and non-poor households as well.

The paper proceeds as follows: section II presents the theoretical framework, section III gives an important understanding of data and descriptive statistics of important variables. Section IV explains the empirical strategy employed and while section V gives results, section VI provides the concluding remarks.

2. THEORETICAL FRAMEWORK

To examine the gender discrimination in intra household allocation of resources, the researcher has used the theoretical model by Rosenzweig and Schultz (1982). The underlying assumption of the model is that household's tend to maximize utility over a period of time, by maximizing household returns from investment in health. Let us assume one-period household model with male and female members. The household has a utility function, given by:

$$U = U(x_h, w_m, w_f) \qquad \dots (1)$$

where x_ha jointly consumed aggregate health expenditure, and w_m and w_f is the wealth of each male and female member (which are treated as continuous variables). The household can allocate resources to each member of the household as investment in human capital. Each male and female member contribute w_m and w_f respectively, to family resources, through direct labour contributions or transfers.
Each individual's wealth depends on his human capital in the following manner:

$$w_m = mH_m \qquad \dots (2)$$

$$w_f = fH_f \qquad \dots (3)$$

where m and f are the respective returns to investment in human capital. According to Rosenzweig and Schultz (1982), market returns to males' human capital is higher than females, thus $m > f$. Since market returns to males are more than females, it is expected that households tend to spend more on economically productive members of the household. There is a tradeoff across household members, therefore, different amounts are allocated on different members based on the perceived returns.

3. DATA

The study is based on the Household Integrated and Economic Survey (HIES) for the year 2010-11. This is a cross sectional dataset covering 16,341 households with 108,933 individuals. The HIES provides important data on household social and economic characteristics, at national and provincial levels with urban and rural breakdown. It is one of the few data sets for Pakistan that contain information on household member's health decisions and details about health expenditures, making it particularly well-suited for examining intra-household resource allocation decisions. The dataset also includes expenditures by various items in both durable and non-durable goods and services. Additionally, it consists of comprehensive details on community characteristics relating to availability of facilities and infrastructure.

The paper investigates the pattern of household health expenditure across age groups and gender. The key variable used for analysis is the budget share of health expenditure out of the total household expenditure. The health expenditure combines purchase of medicines, medical fees, and hospitalization charges incurred by a given household over the year. The kernel density of household medical budget share shows that this variable is log-normally rather than normally distributed (Figures 1, 2).

Descriptive statistics by age and gender demonstrate that across all age groups, females are more likely to report sick than men (see Table 1). Test of significance portray similar results that women as compared to men have higher tendency to report and consult medical practitioner. However, among younger age cohort i.e. (less than 15) data reveals a pro-male bias in reporting sickness and consulting a medical practitioner. Additionally, a graphical illustration of data indicates that households in both urban and rural domains have pro-female bias in healthcare utilization except for the less than 15 age group (refer to figures 3a, 3b, 3c, 3d, 3e, 4a, 4b, 4c, 4d and 4e). The observations suggest a rigorous econometric analysis to validate these findings.

Table 2 shows that on average households allocate 3.5% of total household budget to health, while rural areas spending a larger share (4%) as compared to urban areas (3%). Health seeking behaviour varies across provinces as households in Khyber Pakhtunkhwa (KPK) and Punjab spend more on health expenditure possibly because of variation in income levels, education and other factors. The budget share for health expenditure in Balochistan is alarmingly low at 1%. Household characteristics vary considerably for poor and non-poor households. The average per capita expenditure and income for instance, show considerable disparity in absolute terms.

Socio-demographic variables have been constructed for urban rural regions, poor and non-poor households and at provincial level to describe the profile of the data (refer to Table 2). The variables include household head education (average years of education attained), dependency ratio (Dependency ratio is defined as the ratio of dependents-ages younger than 15 or older than 64-to the working age population (ages 15-64) according to World Bank (2015), percentage male household heads and household income. Community level variables have also been included in the analysis to reflect on the development of the community. Variables include houses having electricity as source of lighting, access to the hospital, and proportion of households with toilets. Urban areas display better community characteristics as compared to rural areas.

4. METHODOLOGY

4.1. Engel Curve

First, the study employs conventional Engel Curve methodology formulated by Working (1943) and later applied by Deaton (1989) to detect gender discrimination in household allocation. Engel Curve is an indirect technique to make inferences about gender discrimination in household consumption or expenditure patterns using household level data. The Engel Curve equation can detect gender bias in health expenditure by linking budget shares on educational expenditure with total household expenditure and the demographics. The demographic composition of the household is incorporated in the model to observe the marginal effects on the expenditure of a particular good. The rationale behind the Engel Curve approach is that if there is no gender discrimination, the addition of a male or a female in a particular age cohort will have identical marginal effect on the share of health expenditure. The study investigates how the presence of individuals of similar ages but opposite sexes affects expenditure on health using household level data. The data constraints allow only for indirect comparison of health expenditure on males and females.

The first equation is the Working-Lesser Engel form, estimated at household level as follows:

$$wi = \alpha + \beta \ln\left(xi — ni\right) + \lambda \ln ni + \Sigma\, \theta k$$
$$(nki \,/\, ni) + \varphi\, zi + \mu \qquad \ldots (4)$$

where,

wi is the share the health expenditure out of the total expenditure of the ith household;

xi is total expenditure per household;

ni is household size;

$ln\ (xi\ /\ ni)$ is the natural log of total per capita expenditure;

nk is the number of people in age-sex class *k;*

$nki\ /\ ni$ is the fraction of the household members in the kth age-gender class;

zi is a vector containing household characteristics such as the education, sex of the household head, dependency ratio, household size, proportions households having electricity and toilet facility, and dummy variables to capture province and region.

μi is the error term..

To study gender discrimination by age groups, the researcher has separated the sample into five age cohorts. i.e. young (age 0 - 15); an intermediate group (age 16 - 25); a prime age working group (age 26 – 40); a middle-aged working group (age 41 - 60); and the elderly (include 60 and above). The age categories are important because health decisions show disparate behvaiour across age groups.

The coefficient β determines whether the good is a luxury or a necessity. If β >0, it indicates the good to be a luxury item and if β<0 then it implies that the good is a necessity. In the present study, health is assumed to be a necessity, so it is expected that β<0. To detect gender bias in the allocation of goods, coefficients of age-gender composition $nki\ /\ ni$ are used. The θk coefficients explain how the change in household composition influences the household's budget allocation on health expenditures. The F test is conducted to identify whether gender differential treatment exists across the genders. The null hypothesis is: $\theta km\ =\ \theta kf$; implying that no gender difference exists in allocation of health expenditure. While alternative hypothesis states that $\theta\ km \neq \theta kf$, pointing out to gender differential treatment in allocation of health expenditure. The model is fitted on the sample of all households regardless of whether the household incurs a zero or positive budget share of health expenditure.

4.2. Hurdle Model

A general consensus prevails that Engel Curve methodology by Deaton (1989) fails to capture the gender discrimination. Deaton has declared it to be a 'puzzle' since the results from studies show no existence of gender discrimination even when there is strong gender biasness apparent in data. Kingdon (2005) proposed that the Hurdle Model can better detect gender biasness by highlighting the channels of gender discrimination within households. The Double Hurdle (DH) model was initially proposed by Cragg (1971), the DH modeling framework is a two-stage generalization of the Tobit model's treatment of truncated dependent variables. The DH model assumes that a household's decision to participate in health seeking behaviour may be governed by different criteria from those guiding the household health expenditure level. According to Wooldridge (2002), Hurdle Model can be carried out in series of steps. The Hurdle methodology adopted by Aslam and Kingdon (2008) is directly relevant to the present research, as it has examined gender discrimination in education expenditure using Pakistani household data at four decision stages. Decisions related to health go through the following stages:

i. Does an individual report being sick (S=1 or S=0)?
ii. Conditional on having reported sick (S=1), does the individual consult a medical practitioner (D=1 or D=0)?
iii. Conditional on having consulted (D=1), does the individual report any positive medical expenditure (M=0 or M>0)?
iv. Conditional on positive expenditure, how much is spent on medical care (E (M))?

The first equation of Hurdle Model is the probability of whether an individual in a household reports sick or not in last two weeks:

$$P(S = 1) = \alpha + \beta \ln\left(xi — ni\right) + \lambda \ln ni + \Sigma\, \theta k \left(nki — ni\right) + \varphi\, zi + \mu i \qquad \ldots (5)$$

The second Hurdle equation is a probit estimation of anyone in the household consulting a medical practitioner, conditional on reporting sick:

$$P(D = 1|S = 1) = \alpha + \beta \ln\left(xi — ni\right) + \lambda \ln ni + \Sigma\, \theta k\, (nki / ni) + \varphi\, zi + \mu i \qquad \ldots (6)$$

In the third Hurdle equation probit model is estimated, which specifies whether anyone in the household incurs positive medical expenditure, conditional on visiting a medical practitioner:

$$P\,(M = 1|D = 1) = \alpha + \beta \ln\left(xi — ni\right) + \lambda \ln ni + \Sigma\, \theta k\, (nki / ni) + \varphi\, zi + \mu i \qquad \ldots (7)$$

Finally, the OLS of conditional budget share of medical expenditure of household i.e., conditional on incurring positive medical expenditure has been estimated.

$$\ln wi = \alpha + \beta \ln\left(xi — ni\right) + \lambda \ln ni + \Sigma\, \theta k\, (nki / ni) + \varphi\, zi + \mu i \qquad \ldots (8)$$

In the hurdle decision stages, the study aims to assess whether significant difference exists between the two genders in terms of reporting sick, consultation rates, incurring medical expenditure, and finally average medical expenditure. As in the Engel Curve equation, the F test can be carried out to identify whether there is statistical difference between the age-sex coefficients. The null hypothesis will be that the coefficients on the male and female variables within each age cohort are equal i.e. $\theta kf = \theta km$. The alternative hypothesis will be that coefficients on the male and female of same age category are not equal, asserting the presence of differential treatment between males and females i.e. $\theta kf \neq \theta km$. This will identify possible channels of bias by testing whether there is a gender difference in the probability of reporting sickness, probability of consulting a doctor, or probability in incurring positive medical expenditure. Finally, it tests whether the bias in allocation is generated from difference in actual medical expenditure incurred.

The household level analysis will be disaggregated at urban and rural level. This will give deeper understanding about possible gender discrimination, as the characteristics between rural and urban areas differ as discussed in the data section. Furthermore, gender discrimination behaviour in health expenditure is investigated separately for poor and non-poor households.

5. RESULTS AND DISCUSSION

5.1. Household Level Analysis

Table 3 presents the results of household level estimations using the Engel curve methodology and the Hurdle Model. The results in Column (1) are based on the conventional Engel Curve and use the budget share of health expenditure as a dependent variable. The age-gender composition variables have been included to see impact on the household demand for health services. The researcher has also controlled various household characteristics including the log of household per capita expenditure, log of household size, the z-vector variables including the dummy variables for gender of the household head, regional and provincial dummies, and community variables that include proportions of households with flushing toilet facility and electricity availability. Engel Curve estimation is also referred to as unconditional OLS (Ordinary Least Squares) as it includes all households irrespective of the share of health in their budget.

The coefficient of log expenditure per capita as presented in column (1) is negative and significant, showing that demand for medical services is treated as a necessity in households across Pakistan. As explained by Working

(1943), goods are considered necessities if their share from total budget decreases as total expenses increase, hence, its total expenditure elasticity is less than unity.

The coefficient of log household size is significant and has a negative sign. This could be an evidence that larger households are less inclined to spend on their health because maybe they are allocating resources for provision of food and shelter. Provincial dummies show that only Khyber Pakhtunkhwa (KPK) has higher share of health expenditure as compared to Punjab, which is the excluded category.

The primary coefficients of interest are the age-sex cohorts, as they exhibit gender discrimination in household health expenditure allocation in Pakistan. The F-test has been used to determine whether there are any statistical differences between the coefficients of males and females in the same age group. The p-values for F test, mentioned in last four rows of Table 3, show that there are no gender effects on health expenditure within households in Pakistan. This result is aligned with previous Engel Curve estimations found in literature as Deaton (1997) has remarked this as a 'puzzle' because this methodology has consistently failed to detect gender differentiation within households.

Results from the Hurdle Model have been presented in Table 3 that assist in identifying possible channels of gender bias. The column (2) presents the results of probit estimation where dependent variable is whether anyone in the household has reported sick in the last two weeks. The Column (3) presents result from second hurdle i.e., the probability of any person consulting medical practitioner from a household, conditional upon reporting sick. The Column (4) presents estimates from third hurdle i.e., the probability that the households spend positively on health, conditional on consulting a medical practitioner. The last column is the OLS of the natural log of the conditional medical budget share, i.e., conditional on having positive medical budget share.

The coefficient of log expenditure per capita is negative and significant for conditional OLS equation that reiterates *Engel's law* that as household income increases, the proportion of expenditure on necessities decreases. The education of the household head affects health care spending behaviour as the coefficient is significant across all three stages of hurdle equations. The household head's education is negatively associated with probability of reporting sick, incurring positive health expenditure and conditional household health expenditure. Log of the household size affects household health decisions positively as larger households have higher probability to report sick, consult medical practitioners, and incur positive health expenditure. However, conditional upon having incurred positive household health expenditure the level of healthcare spending decreases with household size because larger households have to allocate resources for provision of basic necessities.

The main variables of interest are demographic variables that highlight patterns of household health expenditures in Pakistan. The results of the Hurdle Model contrast with the Engel curve since in the latter, the results were unable to detect the role of gender in household health expenditure. The p-values of the F-test for equation 2 mentioned in Table 3 demonstrate that there is noticeable pro-female bias in probability of reporting sick in three age groups: age 16-25, age 41 till 60 and age 60 and above. This can be attributed to the fact that women participate in childbearing and rearing, that affects their health condition such that they tend to report sick more frequently as compared to males. The p-values show pro-male bias in age group 26-40 and pro-female bias in age group 60 and above. An additional female member in age group 26-40 reduces probability of consulting a medical practitioner. Lastly, Column (5) provides estimates of the conditional expenditure using OLS and shows a pro-female bias in the age group 41-60 and 60 and above. In households with a positive expenditure on health, women incur a greater expenditure than that incurred by men of these two age groups.

Overall, there is an existence of pro-female bias in health expenditures at the household level. Household level regressions portray gender disparity in health behaviour in higher sickness reporting by women than men in the prime-age and elderly age categories. The younger women (16-40 age group) are in childbearing age that explains the reason to report sick more than the men. These results are, however, consistent with the findings of earlier study by Yao (2006) with regards to bias in allocation of health expenditure. The plausible explanation for female bias in age groups above 40 is that they are unable to consult a doctor for mild sickness that can eventually impact their health at a later stage in life. The results of consulting a medical practitioner provide existence of pro-male bias in the working age group of 26-40, as males in the working age group are more concerned about their health status since they are cognizant of the strong association between health status and economic wealth. World Bank (2005) explained that women in Pakistan consult doctor less frequently due to mobility constraints and absence of decision making.

The households have an altogether different approach in the case of health care spending as women incur higher expenditures than males. It is established that women in Pakistan are characterized by a higher incidence of disease as compared to men. Pakistani women are more prone to diseases such as osteoporosis and tuberculosis (see Codlin *et al.*, 2009). Raj (2010) ascribes higher incidence of disease among women in Pakistan to the rise of early marriages and young girls giving birth. Early age pregnancy increases complications that have an impact on the health of the mother at later stages.

5.2. Urban-Rural Analysis

Household level analysis, further disaggregated at urban and rural levels, is used to explore how patterns of gender discrimination may vary between the two regions (Tables 4, 5). The Urban-Rural breakdown shows interesting insights about the differential treatment of household pertaining to health expenditure. Households in urban areas have female bias in most cases as shown in Table 4. Females in urban households' report sick more than males, however, there was no bias in case of consulting a doctor. Likewise, there is pro-female bias in age groups above 40 in case of conditional health expenditures in urban region. Women might have greater incidence of disease or other health concerns than males in urban areas leading to higher conditional health expenditures. The bias against female manifests itself in rural areas where males are preferred over females in case of consulting a doctor (refer to Table 5). It has been seen that men in age group 26-40 in rural households consult doctors more than females do. Pro-female bias in age group 41-60 persists in the conditional medical expenditure, highlighting the higher occurrence of disease among women in rural areas.

5.3. Difference in Poor and Non-Poor Households

In addition, the study determines whether households are income responsive to health expenditure allocation so the analysis has been conducted for poor and non-poor households separately. Average income for poor and non-poor households reveal a gap as mentioned in the data section. We investigated the allocation behaviour for health and found that log expenditure per capita is negative and significant indicating that poor households consider health expenditure to be a necessity. Table 6 present the estimates of poor households where a pro-female bias is observed in reporting sick and conditional health expenditure equations, while we notice a pro-male bias in consultation behaviour in age 16-25 and age 26-40. Estimates for richer households in Table 7 detect pro-female bias across all hurdles.

Results indicate that income of the household also determines health utilization behvaiour as we see more male-bias in consulting a doctor within poor households. Younger age cohort is favoured in consulting a doctor possibly because they are the most productive demographic group, thus, their health status is important. Households in upper-income quintiles prefer women since women report sick more than males and eventually consulting doctor and incurring medical expenditure occurs more than among the males.

6. CONCLUSION

The present paper empirically tests the prevalence of gender discrimination in the allocation of health resources within Pakistan. In particular, it aims to analyze whether patterns of gender discrimination are consistent with the ‘market value hypothesis’. Abundant literature is available on ‘market value hypothesis’ as a reason why males are given preference over females, particularly in terms of human capital investments in South Asia. The current study uses the PSLM-HIES for the year 2010-11. For Pakistan, the study employs the Engel Curve and Hurdle Methodology to test the said hypothesis.

The results have shown substantial evidence of pro-female bias within households in Pakistan. The study has analyzed healthcare utilization across all ages, and it has established that households have an altogether different approach in the case of health care spending as women incur higher expenditures than males. The conditional expenditure equation shows that females have higher health expenditure than males in the age group 41-60 and above 60. However, the second stage of hurdle documents pro-male bias in the ‘consulting medical practitioner’ in the age cohort 26 till 40. This is prime working age-group for males, so they are more likely to consult doctors in order to maintain good health status to ensure economic well-being. On the other hand, females in Pakistan generally have higher severity of sickness in later stages of life. Interestingly, in rural areas and poor class, men consult doctor more than women do, provided women report sick with higher frequency than males.

Altogether, this study provides considerable implications regarding developments in the field of health economics. It is widely recognized that Pakistan struggles in producing improved health outcomes for women especially in rural areas and within lower income groups. The results indicate high incidence of women reporting sick, thus the imperative of improving healthcare services for women cannot be understated. However, the present research does require the support of individual data of health expenditure. The potential for researching this subject further is substantial and indeed the subject does warrant greater exploration and understanding.

Appendix

Figure 1. Epanechnikov Kernel Density Function

Unconditional medical expenditure as a proportion of per capita household expenditure

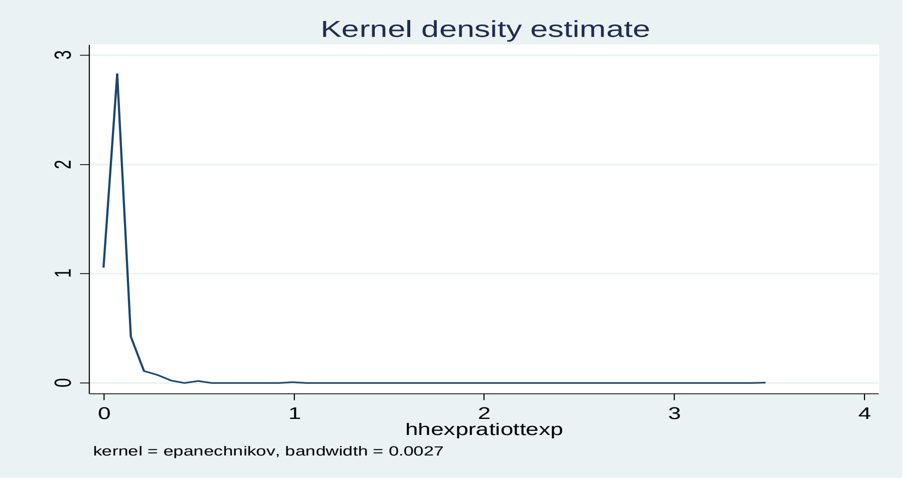

Figure 2. Epanechnikov Kernel Density Function

Log of conditional medical expenditure as a proportion of per capita household expenditure

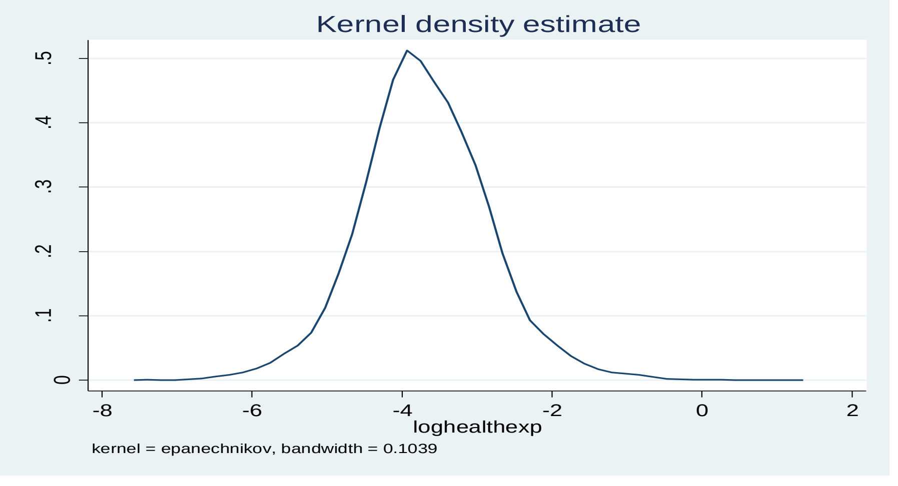

Table 1. Health seeking behaviour within households, across Pakistan

Age groups	Less than 15	16-25	26-40	41-60	Above 60	Total
Male	23934	11479	9470	7799	2807	55,489
Female	22117	11014	10219	7752	2342	53,444
Difference	1817	465	-749	47	465	2,045
Reported sick in last two weeks						9,395
Male	2060	478	364	732	584	4,218
Female	1853	612	826	1232	654	5177
	3.34***	-4.07***	-13.43***	-11.33***	-2.00**	-10.11***
Consulted medical practitioner in last two weeks, conditional on reporting sick						8,942
Male	1999	462	344	688	538	4031
Female	1782	576	785	1170	598	4911
Difference	3.56***	-3.55***	-13.16***	-11.23***	-1.78**	-9.50***

Note: *, ** and *** signify statistically significant gender differences at the 15%, 10%, 5%, and 1% levels respectively. The first row gives gender breakdown within households. Secondly, it gives information about males and females within households who have fallen sick in last two weeks. Lastly, it provides information about individuals who have visited medical practitioners given they have reported sick**.**

Table 2. Summary statistics of Household level variables

HH Variables	Total	Urban	Rural	Poor	Non-poor	Punjab	Sindh	KPK	Baluchistan
Sample size	16,341	6,589	9,752	9,809	6,532	6954	4098	2954	2335
Average Household size	6.66	6.53	6.75	5.8	7.9	6.174	6.65	7.32	7.32
Male headed households (%)	91.79	40.46	59.44	91	93	41.13	26.57	16.89	15.41
Household head education	5.11	6.98	3.84	3.6	7.4	5.29	5.6	4.69	4.22
Dependency ratio	0.43	0.45	0.39	0.46	0.4	0.41	0.42	0.44	0.47
Health expenditure (In Rupees)	6466	6821	6225	4,357	9,526	6732	4868	10415	3520
Health expenditure ratio of total Household Expenditure	0.03	0.03	0.04	0.04	0.03	0.04	0.02	0.05	0.01
Average income (In Rupees)	214,990	268,551	178,817	117,923	360,710	227,734	190,232	229,259	202,437
Average per capita expenditure (In Rupees)	31,342	40,606	25,086	23,050	43,779	33,405	31,303	29,188	27996
Proportion of HH Electricity as source of lighting	90.45	97.78	85.50	87.47	94.93	95.00	89.24	93.74	74.90
Proportion of HH having access to toilets	67.51	72.82	63.92	64.04	72.70	80.01	46.78	79.08	51.99

Table 3. Household level results of overall Pakistan:

	OLS	Hurdle Model			
	Unconditional Exp	Probit Sick	Probit Consulted	Probit Incur pos Exp	OLS Conditional Exp
	(1)	(2)	(3)	(4)	(5)
VARIABLES	HEALTH_SHARE	REPORTED_SICK	CONSULTED	POSITIVE HEALTH EXP	LOG OF HEALTH_SHARE
Log Expenditure per capita	-0.00576***	-0.0113	0.0166***	0.00198**	-0.227***
	(0.000993)	(0.00885)	(0.00426)	(0.000779)	(0.0239)
Gender of the Household (Male=1)	0.00160	0.0479***	8.04e-05	-0.00127	0.161***
	(0.00195)	(0.0172)	(0.0110)	(0.000774)	(0.0458)
Log of Household size	-0.00836***	0.206***	0.0189***	0.000363	-0.248***
	(0.00116)	(0.0106)	(0.00624)	(0.000994)	(0.0262)
Household head Education	-0.000211**	-0.00223***	0.000656	-5.82e-05	-0.00579***
	(9.40e-05)	(0.000839)	(0.000481)	(6.98e-05)	(0.00207)
Dependency ratio	0.0379***	0.0918	0.0139	0.000429	0.464**
	(0.00822)	(0.0741)	(0.0367)	(0.00636)	(0.188)
Sindh	-0.00968***	0.151***	-0.00135	0.00184**	-0.325***

	(0.00117)	(0.0105)	(0.00613)	(0.000908)	(0.0250)
KPK	0.0159***	0.111***	-0.00763	-0.000903	0.367***
	(0.00124)	(0.0112)	(0.00695)	(0.00119)	(0.0264)
Balochistan	-0.0192***	-0.0428***	-0.0522***	-0.000919	-0.449***
	(0.00144)	(0.0128)	(0.0129)	(0.00167)	(0.0349)
Region (Urban=1)	-0.00650***	-0.00829	-0.00234	-0.000999	-0.146***
	(0.000978)	(0.00874)	(0.00508)	(0.000937)	(0.0215)
Electricity installed	-0.000557	-0.00368	0.00721	0.00127	-0.0283
	(0.00158)	(0.0142)	(0.00830)	(0.00181)	(0.0351)
Flushing toilet	-0.00117	0.0300***	0.00149	-0.000255	-0.132***
	(0.000999)	(0.00887)	(0.00502)	(0.000798)	(0.0218)

Prop Females less than 15	0.000708	-0.0105	-0.00969	0.00328	0.0136
	(0.00354)	(0.0317)	(0.0186)	(0.00297)	(0.0779)
Prop Males 16 till 25	0.0336***	-0.0299	-0.00876	0.000279	0.421**
	(0.00912)	(0.0823)	(0.0419)	(0.00718)	(0.209)
Prop Females 16 till 25	0.0400***	0.103	-0.00864	0.00785	0.559***
	(0.00925)	(0.0834)	(0.0429)	(0.00776)	(0.211)
Prop Males 26 till 40	0.0399***	0.126	0.0302	-7.45e-05	0.555**
	(0.00953)	(0.0863)	(0.0456)	(0.00750)	(0.219)
Prop Females 26 till 40	0.0479***	0.0544	-0.0439	0.00473	0.650***
	(0.0100)	(0.0908)	(0.0471)	(0.00870)	(0.230)
Prop Males 41 till 60	0.0493***	0.0214	-0.0626	-0.00158	0.172
	(0.00979)	(0.0897)	(0.0464)	(0.00764)	(0.233)
Prop Females 41 till 60	0.0491***	0.261***	-0.0241	0.00533	1.173***
	(0.00979)	(0.0890)	(0.0449)	(0.00845)	(0.226)
Prop Males greater than 60	0.0378***	0.231***	-0.0738**	-0.000297	0.340**
	(0.00670)	(0.0606)	(0.0315)	(0.00484)	(0.159)
Prop Females greater than 60	0.0385***	0.399***	0.00682	0.00114	0.846***
	(0.00613)	(0.0551)	(0.0313)	(0.00461)	(0.148)
Constant	0.0739***				-1.210***

	(0.0136)				(0.319)
Observations	16,341	16,341	6,673	6,404	6,385
R-squared	0.059	0.0469	0.0405	0.1614	0.179
			P-values		
Age 16 till 25	0.2165	0.0044	0.9964	0.1388	0.251
Age 26 till 40	0.2641	0.2823	0.0601	0.4833	0.589
Age 41 till 60	0.9801	0.0014	0.314	0.318	0
Age 60 and above	0.9334	0.0454	0.072	0.839	0.0295

Note: Standard errors in parentheses. *significant at 10%, **significant at 5%, *** significant at 1% level. Marginal effects and pseudo R-squared reported for probit equations. Base category for region is ‘Rural’, for provincial dummies is ‘Punjab’ and for age-sex cohorts is ‘proportion of males aged less than 15’.

Table 4. Urban Household Level Analysis, Pakistan

	OLS	Hurdle Model			
	Unconditional Exp	Probit Sick	Probit Consulted	Probit Incur pos Exp	OLS Conditional Exp
	(1)	(2)	(3)	(4)	(5)
VARIABLES	HEALTH_ SHARE	REPORTED_ SICK	CONSULTED	POSITIVE HEALTH EXP	LOG OF HEALTH_SHARE
Log Expenditure per capita	-0.00616***	-0.0116	0.0112**	0.000162	-0.224***
	(0.00131)	(0.0121)	(0.00525)	(0.0700)	(0.0367)
Gender of the Household (Male=1)	0.00419*	0.00736	-0.00465	-7.63e-05	0.296***
	(0.00250)	(0.0276)	(0.0154)	(0.0340)	(0.0725)
Log of Household size	-0.00650***	0.244***	0.0120	-0.000121	-0.253***
	(0.00151)	(0.0169)	(0.00982)	(0.0522)	(0.0433)
Household head Education	-0.000127	-0.00124	0.000434	1.16e-06	-0.00696**
	(0.000119)	(0.00124)	(0.000676)	(0.000501)	(0.00323)
Dependency ratio	0.0195*	0.0222	-0.00879	-0.0179	0.159
	(0.0102)	(0.112)	(0.0517)	(4.795)	(0.274)
Sindh	-0.00948***	0.143***	-0.0126	7.26e-05	-0.339***
	(0.00142)	(0.0158)	(0.00962)	(0.0316)	(0.0400)
KPK	0.0133***	0.117***	0.00845	-0.000193	0.401***

	(0.00166)	(0.0185)	(0.00953)	(0.0802)	(0.0444)
Balochistan	-0.0137***	0.0197	-0.0357**	-0.000133	-0.323***
	(0.00187)	(0.0207)	(0.0174)	(0.0559)	(0.0543)
Electricity installed	0.00461	0.0391	0.0407	0.00215	0.177
	(0.00382)	(0.0415)	(0.0370)	(0.770)	(0.119)
Flushing toilet	-0.00317**	-0.0237	-0.0159**	-2.39e-06	-0.173***
	(0.00135)	(0.0147)	(0.00700)	(0.00104)	(0.0369)
Prop females less than 15	0.00327	0.0170	0.0380	0.000331	0.190
	(0.00466)	(0.0508)	(0.0281)	(0.143)	(0.129)
Prop Males 16 till 25	0.0175	-0.132	0.00759	-0.0178	0.333
	(0.0113)	(0.124)	(0.0598)	(4.775)	(0.310)
Prop Females 16 till 25	0.0153	-0.0156	0.0213	-0.0173	0.410
	(0.0115)	(0.126)	(0.0618)	(4.533)	(0.312)
Prop Males 26 till 40	0.0174	0.0265	0.0463	-0.0182	0.306
	(0.0118)	(0.129)	(0.0649)	(4.944)	(0.320)
Prop Females 26 till 40	0.0215*	-0.00685	-0.00737	-0.0172	0.330
	(0.0126)	(0.139)	(0.0694)	(4.507)	(0.344)
Prop Males 41 till 60	0.0116	-0.0350	0.000404	-0.0180	-0.153

	(0.0122)	(0.136)	(0.0691)	(4.875)	(0.347)
Prop Females 41 till 60	0.0561***	0.255*	-0.0117	-0.0176	1.338***
	(0.0125)	(0.138)	(0.0652)	(4.667)	(0.342)
Prop Males greater than 60	0.0132	0.314***	-0.0266	-0.000399	0.160
	(0.00886)	(0.0979)	(0.0507)	(0.173)	(0.256)
Prop Females greater than 60	0.0382***	0.368***	0.000608	-0.000682	1.282***
	(0.00824)	(0.0904)	(0.0494)	(0.295)	(0.262)
Constant	0.0812***				-1.509***
	(0.0181)				(0.498)
Observations	6,585	6,589	2,603	2,507	2,498
R-squared	0.051				0.162
P-values					
Age 16 till 25	0.7149	0.0884	0.7328	0.4353	0.6758
Age 26 till 40	0.6342	0.7404	0.3861	0.3125	0.93
Age 41 till 60	0	0.0155	0.8528	0.6845	0
Age 60 and above	0.0405	0.6911	0.7096	0.8105	0.0033

Note: Standard errors in parentheses. *significant at 10%, **significant at 5%, *** significant at 1% level. Marginal effects are reported for probit equations. Base category for provincial dummies ‘Punjab’ and for age-sex cohorts is ‘proportion of males aged less than 15'.

Table 5. Rural Household Level Analysis

	OLS	Hurdle Model			
	Unconditional Exp	Probit Sick	Probit Consulted	Probit Incur pos Exp	OLS Conditional Exp
	(1)	(2)	(3)	(4)	(5)
VARIABLES	HEALTH_SHARE	REPORTED_SICK	CONSULTED	POSITIVE HEALTH EXP	LOG OF HEALTH_SHARE
Log Expenditure per capita	-0.00626***	0.00667	0.0292***	0.000135	-0.204***
	(0.00165)	(0.0134)	(0.00734)	(0.0447)	(0.0324)
Gender of the Household (Male=1)	-0.000613	0.0718***	0.00250		0.0698
	(0.00284)	(0.0222)	(0.0143)		(0.0596)
Log of Household size	-0.00949***	0.188***	0.0225***	8.18e-06	-0.229***
	(0.00169)	(0.0138)	(0.00781)	(0.00271)	(0.0333)
Household head Education	-0.000192	-0.00258**	0.00111*	-7.79e-06	-0.00463*
	(0.000141)	(0.00114)	(0.000664)	(0.00258)	(0.00272)
Dependency ratio	0.0507***	0.138	0.0195	0.0171	0.913***
	(0.0122)	(0.0999)	(0.0494)	(4.143)	(0.270)
Sindh	-0.00998***	0.159***	0.00840		-0.324***
	(0.00176)	(0.0142)	(0.00738)		(0.0321)
KPK	0.0176***	0.104***	-0.0176*		0.343***

	(0.00175)	(0.0143)	(0.00922)		(0.0329)
Balochistan	-0.0227***	-0.0877***	-0.0657***		-0.557***
	(0.00210)	(0.0165)	(0.0189)		(0.0458)
Electricity installed	-0.00235	-0.0231	0.00145	3.60e-05	-0.0716*
	(0.00192)	(0.0157)	(0.00810)	(0.0118)	(0.0370)
Flushing toilet	4.43e-05	0.0630***	0.0154**	-6.69e-05	-0.109***
	(0.00141)	(0.0113)	(0.00679)	(0.0223)	(0.0272)
Prop females less than 15	-0.000639	-0.0244	-0.0373	0.000185	-0.0815
	(0.00503)	(0.0407)	(0.0233)	(0.0613)	(0.0976)
Prop Males 16 till 25	0.0443***	0.0307	-0.0293	0.0170	0.724**
	(0.0136)	(0.111)	(0.0556)	(4.114)	(0.296)
Prop Females 16 till 25	0.0578***	0.171	-0.0343	0.0176	0.931***
	(0.0137)	(0.112)	(0.0566)	(4.308)	(0.300)
Prop Males 26 till 40	0.0577***	0.195*	0.0130	0.0171	1.030***
	(0.0142)	(0.117)	(0.0608)	(4.142)	(0.313)
Prop Females 26 till 40	0.0683***	0.0843	-0.0763	0.0172	1.129***
	(0.0147)	(0.121)	(0.0612)	(4.190)	(0.324)
Prop Males 41 till 60	0.0769***	0.0615	-0.0942	0.0168	0.674**
	(0.0145)	(0.120)	(0.0607)	(4.050)	(0.327)

Prop Females 41 till 60	0.0475***	0.263**	-0.0485	0.0174	1.338***
	(0.0142)	(0.117)	(0.0584)	(4.260)	(0.314)
Prop Males greater than 60	0.0543***	0.181**	-0.0878**	0.0165	0.539***
	(0.00951)	(0.0777)	(0.0388)	(3.963)	(0.203)
Prop Females greater than 60	0.0401***	0.402***	0.00193		0.598***
	(0.00862)	(0.0699)	(0.0393)		(0.179)
Constant	0.0697***				-1.752***
	(0.0214)				(0.437)
Observations	9,752	9,752	4,070	3,159	3,887
R-squared	0.059				0.163
P-values					
Age 16 till 25	0.7149	0.0884	0.7328	0.4353	0.6758
Age 26 till 40	0.6342	0.7404	0.3861	0.3125	0.93
Age 41 till 60	0	0.0155	0.8528	0.6845	0
Age 60 and above	0.0405	0.6911	0.7096	0.8105	0.0033

Note: Standard errors in parentheses. *significant at 10%, **significant at 5%, *** significant at 1% level. Marginal effects and pseudo R-squared reported for probit equations. Base category, for provincial dummies ‘Punjab’ and for age-sex cohorts is ‘proportion of males aged less than 15'.

Table 6. Poor Household Level Analysis, Pakistan

	OLS	Hurdle			
	Unconditional Exp	Probit Sick	Probit Consulted	Incur pos Exp	Conditional Exp
	(1)	(2)	(3)	(4)	(5)
VARIABLES	HEALTH_ SHARE	REPORTED_SICK	CONSULTED	POSITIVE HEALTH EXP	LOG OF HEALTH_SHARE
Log Expenditure per capita	-0.0212***	-0.0166	0.0234***	8.76e-05	-0.278***
	(0.00198)	(0.0133)	(0.00575)	(0.000154)	(0.0410)
Gender of the Household (Male=1)	0.000541	0.0656***	-0.00795	-4.39e-05	0.160***
	(0.00275)	(0.0218)	(0.0133)	(8.42e-05)	(0.0592)
Log of Household size	-0.0199***	0.204***	0.00914	1.52e-05	-0.323***
	(0.00206)	(0.0166)	(0.00977)	(6.43e-05)	(0.0425)
Household head Education	4.73e-06	-0.000433	0.00211***	-1.02e-06	-0.00704**
	(0.000145)	(0.00118)	(0.000767)	(4.54e-06)	(0.00286)
Dependency ratio	0.0339***	0.0860	0.0455	-0.00881	0.426*
	(0.0107)	(0.0882)	(0.0465)	(0.0162)	(0.222)
Sindh	-0.00804***	0.133***	0.00662	0.000248	-0.293***
	(0.00161)	(0.0133)	(0.00774)	(0.000161)	(0.0307)
KPK	0.0175***	0.0817***	-0.00489	-3.15e-05	0.343***

	(0.00181)	(0.0150)	(0.00923)	(8.56e-05)	(0.0348)
Balochistan	-0.0168***	-0.122***	-0.0818***	-0.000183	-0.450***
	(0.00212)	(0.0161)	(0.0216)	(0.000386)	(0.0510)
Electricity installed	-0.00141	-0.0231	0.00134	2.10e-05	-0.0601
	(0.00196)	(0.0163)	(0.00922)	(8.09e-05)	(0.0391)
Flushing toilet	-0.00105	0.0177	0.00146	-2.91e-05	-0.106***
	(0.00136)	(0.0111)	(0.00671)	(6.51e-05)	(0.0269)
Prop females less than 15	0.000663	0.0310	-0.0327	0.000224	0.0105
	(0.00468)	(0.0383)	(0.0240)	(0.000414)	(0.0923)
Prop Males 16 till 25	0.0364***	-0.00316	0.0467	-0.00884	0.497**
	(0.0121)	(0.0999)	(0.0551)	(0.0163)	(0.251)
Prop Females 16 till 25	0.0358***	0.117	-0.0358	-0.00861	0.413
	(0.0122)	(0.101)	(0.0550)	(0.0159)	(0.252)
Prop Males 26 till 40	0.0363***	0.143	0.0693	-0.00879	0.578**
	(0.0129)	(0.107)	(0.0615)	(0.0162)	(0.269)
Prop Females 26 till 40	0.0511***	0.0750	-0.0642	-0.00870	0.567**
	(0.0131)	(0.109)	(0.0605)	(0.0160)	(0.276)
Prop Males 41 till 60	0.0536***	0.0449	-0.0576	-0.00888	0.215
	(0.0129)	(0.109)	(0.0605)	(0.0164)	(0.282)

Prop Females 41 till 60	0.0425***	0.320***	-0.0315	-0.00855	1.040***
	(0.0127)	(0.105)	(0.0566)	(0.0158)	(0.266)
Prop Males greater than 60	0.0326***	0.294***	-0.0905**	-7.36e-06	0.147
	(0.00881)	(0.0727)	(0.0414)	(0.000239)	(0.188)
Prop Females greater than 60	0.0379***	0.345***	-0.000473	-3.75e-05	0.782***
	(0.00784)	(0.0647)	(0.0410)	(0.000210)	(0.172)
Constant	0.247***				-0.573
	(0.0242)				(0.505)
Observations	9,805	9,809	3,912	3,728	3,716
R-squared	0.059				0.145
P-values					
Age 16 till 25	0.9424	0.05	0.034	0.3674	0.5963
Age 26 till 40	0.1374	0.42	0.0126	0.7944	0.9599
Age 41 till 60	0.2731	0.0019	0.5897	0.3404	0.0009
Age 60 and above	0.6459	0.6015	0.1145	0.9251	0.0191

Note: Standard errors in parentheses. *significant at 10%, **significant at 5%, *** significant at 1% level. Marginal effects and pseudo R-squared reported for probit equations. Base category for region is ‘Rural’for provincial dummies ‘Punjab’ and for age-sex cohorts is ‘proportion of males aged less than 15'.

Table 7. Non-Poor Household Level Analysis

	OLS	Hurdle			
	Unconditional Exp	Probit Sick	Probit Consulted	Probit Incur pos Exp	Conditional Exp
	(1)	(2)	(3)	(4)	(5)
VARIABLES	HEALTH_SHARE	REPORTED_SICK	CONSULTED	POSITIVE HEALTH EXP	LOG OF HEALTH_SHARE
Log Expenditure per capita	-0.00153	0.0437***	0.00708	0.00172	-0.303***
	(0.00154)	(0.0164)	(0.00826)	(0.00150)	(0.0415)
Gender of the Household	0.00496*	0.0213	0.00558		0.172**
(Male=1)	(0.00270)	(0.0286)	(0.0164)		(0.0739)
Log of Household size	-0.00406**	0.249***	0.0222**	0.000107	-0.264***
	(0.00192)	(0.0206)	(0.0103)	(0.00148)	(0.0513)
Household head Education	-0.000593***	-0.00403***	-0.000160	-7.71e-05	-0.00659**
	(0.000118)	(0.00124)	(0.000589)	(8.65e-05)	(0.00308)
Dependency ratio	0.0456***	0.0964	-0.0412	0.0169	0.677*
	(0.0129)	(0.140)	(0.0607)	(0.0120)	(0.347)
Sindh	-0.0105***	0.167***	-0.0160	0.000702	-0.378***
	(0.00166)	(0.0176)	(0.0106)	(0.00106)	(0.0437)
KPK	0.0158***	0.158***	-0.0137	-0.000668	0.399***
	(0.00161)	(0.0171)	(0.0102)	(0.00148)	(0.0411)

Balochistan	-0.0197***	0.0645***	-0.0300**	0.000429	-0.448***
	(0.00188)	(0.0201)	(0.0151)	(0.00107)	(0.0504)
Electricity installed	-0.000471	0.0151	0.0106	0.00115	-0.0517
	(0.00277)	(0.0287)	(0.0156)	(0.00285)	(0.0742)
Flushing toilet	-0.00242*	0.0464***	0.00205	0.000279	-0.175***
	(0.00143)	(0.0148)	(0.00722)	(0.00116)	(0.0374)
Prop females less than 15	0.000533	-0.0897	0.0332	0.000959	-0.0149
	(0.00537)	(0.0567)	(0.0281)	(0.00384)	(0.142)
Prop Males 16 till 25	0.0293**	-0.0674	-0.0809	0.0187	0.414
	(0.0140)	(0.151)	(0.0660)	(0.0130)	(0.378)
Prop Females 16 till 25	0.0433***	0.0873	0.00388	0.0259*	0.814**
	(0.0143)	(0.154)	(0.0686)	(0.0139)	(0.384)
Prop Males 26 till 40	0.0386***	0.0859	-0.0340	0.0145	0.546
	(0.0145)	(0.156)	(0.0693)	(0.0128)	(0.389)
Prop Females 26 till 40	0.0340**	0.00896	-0.0384	0.0219	0.752*
	(0.0155)	(0.168)	(0.0748)	(0.0143)	(0.417)
Prop Males 41 till 60	0.0315**	-0.0417	-0.0540	0.0156	0.166
	(0.0152)	(0.165)	(0.0733)	(0.0137)	(0.422)
Prop Females 41 till 60	0.0579***	0.129	-0.0359	0.0194	1.572***

	(0.0158)	(0.171)	(0.0763)	(0.0141)	(0.425)
Prop Males greater than 60	0.0368***	0.0492	-0.0410	0.0107	0.756**
	(0.0108)	(0.117)	(0.0507)	(0.0132)	(0.307)
Prop Females greater than 60	0.0276**	0.626***	-0.00758	0.0165	1.049***
	(0.0108)	(0.113)	(0.0499)	(0.0134)	(0.286)
Constant	0.0195				-0.567
	(0.0225)				(0.600)
Observations	6,532	6,532	2,761	2,676	2,669
R-squared	0.069				0.186
			P-values		
Age 16 till 25	0.036	0.0304	0.0172	0.3054	0.037
Age 26 till 40	0.6554	0.4878	0.9373	0.4164	0.4881
Age 41 till 60	0.0373	0.2301	0.7734	0.7255	0.0001
Age 60 and above	0.5629	0.0007	0.6549	0.7231	0.5038

Note: Standard errors in parentheses. *significant at 10%, **significant at 5%, *** significant at 1% level. Marginal effects and pseudo R-squared reported for probit equations. Base category, for provincial dummies ‘Punjab’ and for age-sex cohorts is ‘proportion of males aged less than 15.

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