INCOME ELASTICITY OF HOUSEHOLD’S HEALTH AND WELLNESS IN RURAL PAKISTAN

Habibullah Magsi¹, Mukhtiar Memon², Muazzam Sabir³, Inayatullah Magsi⁴, Nadeem Anwar⁵

ABSTRACT
This study investigates the income elasticity of health in rural areas of Pakistan. It was conducted during 2019-20 to find out the responsiveness of health expenses proportionate to the earnings of rural people of the country. Multistage sampling technique was used for data collection from 180 respondents from two districts, i.e., Toba Tek Singh district from Punjab province and Tando Allahyar district from Sindh province. The respondents were categorized into three income groups – low, medium, and high – and were interviewed to find out that what portion of income of each group is being directly or indirectly on their health and wellness. The findings show that the low, medium, and high-income groups were spending about 17.7, 7.7 and 4.2 percent of their income on health and wellness, respectively. Further, it was observed that with the increase of income, the low income group will spend another 8.8 percent on health as compared to the medium, and high-income groups, who will lower the expenses on health by 0.6 and 0.09 percent, respectively. Due to large family size i.e., 9.7 persons per family, most of them were unable to fulfill the basic nutritional requirements in daily food. Moreover, in case of emergency, low-income group either uses home-made medicines (totkas) or pays visits to the unauthorized doctors called hakeem. While medium and high-income groups prefer to visit the private hospitals, due to insufficient healthcare facilities at the public hospitals. The research suggests that the public health facilities should be improved and extended to rural areas; and the health insurance policies should be introduced for low-income groups of the country.

Key Words: Elasticity, Health Insurance, Rural Pakistan

¹Department of Agri. Economics, Sindh Agriculture University Tandojam, Pakistan. Email: hmag@sa.edu.pk
²Information Technology Centre, Sindh Agriculture University Tandojam, Pakistan.
³⁵Department of Agri. Economics, College of Agriculture, University of Sargodha, Pakistan.
⁴Department of Allied Subjects, Sindh Madressatul Islam University Karachi, Pakistan.
BACKGROUND OF THE STUDY

Investment on human capital is emphasized as one of the major contributions for increasing the productivity of any economy. Such investment eventually leads to human welfare which is the main objective of sustainable social development (Yadav, 2020; Mihalache, 2019). It is a common fact that a laborer with good health and wellness can contribute more effectively and efficiently in the economic development of the region. Besides, the health and nutrition of citizens are also the prime focus of the governments because human health directly proportionate with economic growth of the country (Gallardo-Albarrán, 2018; WHO, 2009; Akram and Khan, 2007). Several studies designate healthcare as luxury, whereas many studies consider healthcare as a necessary good. However, the debate over income elasticity of health is quite long (Jewell, et. al., 2003; Dreger and Reimers, 2005). In order to produce more efficient, skillful, and productive human capital, the public and private organizations are engaged to subsidize the health care facilities for people through different strategies, policies, campaigns, and programs such as health insurance plans, awareness campaigns, workshops, sports events, free medical checkup, and treatments.

As indicated by WHO in 2009, increase in food prices in the world has threatened public health and endangered the fitness of the most deprived group of women, children, and low-income families. In fact, malnutrition does not only reduce the productivity of people of a nation, but also increases health expenses. Several studies on health and nutrition indicate that nutritional costs are associated with healthy food choices. Furthermore, these studies also support direct relation between national income and health expenses (Yadav, 2020; Cullis and West, 1979; Leu, 1986; Hansen and King, 1996; Barros, 1998). Rise in the food prices leaves severe impact on health and nutritional value of the population of developing countries. Consequently, individuals who change their nutrition pattern (diet-plan) frequently due to financial conditions; end-up with many problems for their family including deteriorating of health. This issue may increase with growing food insecurity in current scenario (WHO, 2009). This is also a huge problem that nowadays economics is not integrated with mainstream nutrition science except “Home Economics”, but it can offer greater understanding of how socioeconomic status may interplay with human nutritional status and provide mankind a nutritionally balanced and healthier food (Lo, et. al., 2009).

Health generates positive externalities for the society as a whole and improves the equity of the public and private sector as well. In this regard, the government of Pakistan is also providing a wide range of infrastructure and social services to the nation through public private partnerships. The distribution of access to use of health and health related parameters among households has been a long-standing concern among economists (Toor and Butt, 2004).
In Pakistan, the situation of health is comparatively different from other developing countries. Due to COVID-19, the health expenditures have drastically increased in the country and the world; otherwise, the country used to spend less than one percent of its GDP on health sector (Government of Pakistan, 2020). Officially, the communal health system in Punjab and other provinces of the country is decentralized at districts and tehsil levels; while at the ground level, the structure has many complications. In fact, the provincial government is just focusing on urban areas, it does not provide sufficient health care facilities to rural population. Even though in the rural areas there are no sufficient availability of laboratories and other required infrastructure to diagnose the diseases. Resultantly, people from areas are migrating to urban centers, which is causing social, economic, and environmental issues (Rannan-Eliya, 2008). But due to meager share of GDP spent on health, the households are infected by different diseases in different periods of time and that is very alarming for productive human capital.

Furthermore, many people are unaware about their health especially in rural areas, perhaps their financial conditions are not good enough to bear actual cost of private hospitals. Thus, the purpose of this study is to investigate health cost and income ratio of households of different income groups in district Toba Tek Singh (Punjab) and district Tando Allahyar (Sindh), while evaluating that how much they are willing to pay (invest) for better health. Whereas the objectives of the study are (i) to determine relationship between household’s income (high, medium, and low groups) and general expenditures in rural areas of both districts; and (ii) to compare income elasticity of health expenditure of different income groups in the study area.

**DATA AND METHODOLOGY**

**Study area and population**

The study was conducted at two rural districts of Pakistan Toba Tek Singh district from Punjab province and Tando Allahyar from Sindh province. The main purpose of selection of this area was that most of the rural community of the provinces are living there. Both districts are disclosed as rural as well as the agriculture hub of Punjab and Sindh provinces (Government of Pakistan, 2008). Where, the area harvests numerous kinds of agricultural and dairy commodities. The health condition of the people of this district is relatively better than the other rural areas of the country.

**Sampling procedure**

The data was collected through multistage sampling technique. At first stage two districts (Toba Tek Singh and Tando Allahyar) were selected. At final stage from each district, ninety respondents were purposively selected for interview through pretested questionnaire (thirty from each income groups low, medium, and high). Thus, the size of sample was 180 rural household heads, 60 each from low, medium, and high-income groups. For this research, the respondents were categorized while following (Subohi,
Magsi et al. (2006) research on classification of different income group people. According to her, those persons whose annual income is less than or equal to Rs 5,240,000 are counted as low-income group (IG_1); medium-income group (IG_2), whose income is between Rs. 240,001 to Rs.750,000 annually; and the high-income group (IG_3), whose income is more than Rs. 750,000 annually from different sources. Even tough, income of the respondents is not normally distributed in the country, where high income group people are low as compared to the low-income group people, but equal number of all income group respondents were selected to generalize the results.

**Data collection and analysis**

Primary data was collected from the selected areas through well-prepared questionnaire during 2019-2020. The steps which were followed are discussed as under.

**Interview schedule**

Interviewing schedule refers to the questionnaire formulated according to the requirements of the research objectives. It is a technical procedure to construct the interview schedule consisting of structured and unstructured questions, prepared in the English. The questions were mostly focused on family size, literacy status of the respondents, sources of income, family expenditure mainly on their health, general spending, types of diseases which effect their family, any causality due to any disease, health facilities in their area, where they preferred to go for their treatment, dietary plan, outdoor activities for entertainment etc., which were related to the study.

The respondents were approached at homes/farms and information was collected in an amicable environment. Although the interview schedule was prepared in English, the interviews were conducted in the local languages (i.e., in Punjabi and Urdu languages in Toba Tech Singh; and in Sindhi language in Tando Allahyar) to make it convenient and understandable for the respondents and every effort was made to get the required information with maximum accuracy. In order to develop the interview schedule at scientific scales, the first draft of the questionnaire was pre-tested on ten percent of the total respondents. After pre-testing of the questionnaire, necessary amendments were made, for example, some more questions were added in the questionnaire. Thus, the questionnaire was finalized and carried out during the field survey.

**Analytical measures**

Once data collected, tabulated, and analyzed. The descriptive statistics and the regression were estimated. The parameters from this estimation were used along with data. To investigate how much rural household invested their part of income (which he or she gets from various sources) on the health. To find out relationship between general expenditures and particular expenditures made on their health of all three (low, medium, and high)

---

5 One USS equals to about 165 Pakistani rupees (Rs).
Income Elasticity of Household’s Health and Wellness in Rural income groups, a cross-sectional regression model based on primary data was proposed as under:

\[ H_{ex} = \beta_0 + \beta_1 Ic + \epsilon \]

Where, \( H_{ex} \) = Expenditure on health; \( Ic \) = Income (earned from all sources); \( \beta_0 \) = Parameter which shows expenditures on health with no income; \( \beta_1 \) = Parameter which shows the income elasticity of health expenditure; \( \epsilon \) = error term.

**Challenges faced during data collection**

We faced several unavoidable difficulties in the research area during the data collection. As majority of the respondents were illiterate and/or had up-to primary level of education; and most of them were less social. Despite this fact, we tried our best to convince the respondents about the purpose of the study. Some respondents were still suspicious about questions like income sources, family size etc. Some respondents hesitated and rejected to give information, because they thought that their personal information might be used to impose new taxes. Thus, we had to put too much effort to satisfy the respondents and collected the required information. Moreover, transportation facility was not properly available in the study area. Some of the villages were not linked with the main road and thus, we had to face much difficulty to meet the respondents. Despite all the above-mentioned difficulties, we tried our level best to collect relevant and required information from the study area.

**FINDINGS OF THE STUDY**

This section provides a discussion on the results of the research, where it highlights the socioeconomic characteristics of the study area, followed by an investigation that how many people are conscious about their health. Furthermore, it was also disclosed that which precautionary measures the respondents have adopted for personal and their family members.

**Socioeconomics of the households**

The results show that average age of the respondents was more than 37 years, which makes them quite mature to answer the interview questions and respond on behalf of their families (see Table 1).

**Table 1: Descriptive statsits of the respondents**

<table>
<thead>
<tr>
<th>Description</th>
<th>IG₁</th>
<th>IG₂</th>
<th>IG₃</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average age (years)</td>
<td>37.2</td>
<td>42.7</td>
<td>47.5</td>
</tr>
<tr>
<td>Family size (No.)</td>
<td>9</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>Illiterate (%)</td>
<td>30</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>
In rural areas of Pakistan, mostly people reside in joint family system (Sheikh, et al., 2016). The average family size of all three income groups was on 9.7 persons per family, which is higher according to national average family size of 6.2 member per family (Government of Pakistan, 2020). Majority of the respondents were literate, but only high-income group members had qualification up-to university level. Affordability of expensive for university education is the main hurdle for acquiring higher education for middle and low-income groups. The people from low-income group prefer to go for work for livelihood after secondary school education. Several studies highlighted the impact of poor livelihood conditions on education and health. As reported by (Abbas and Hiemenz, 2011) in rural Punjab, the financial conditions of family heads do not allow them to bear the school and tuition fee burdens of their kids; that is why they were living in exhausted and worst conditions. The enrolment rate in rural areas of Pakistan has fallen significantly due to increase in the educational expenditures (Government of Pakistan, 2020). That is why, poor economic conditions become the major reason of child labor in the country (Gulzar et al., 2009). Results further show that although there is low proportion of income spent by high-income group on health as compared to medium income group, but their expenditure in term of rupees is almost the same. It may either be due to high-income group is more health conscious or it uses better quality of food with balanced diet. In line with the findings, literature has already highlighted the importance of food demand and calorie intake for good health, where they have concluded that the demand for nutritious food rises with increase in income (Melo et al., 2015; Colen et al., 2018).

**Health consciousness of the respondents**

Table 2 describes the health issues of respondents by giving the diseases by different income groups. It shows that during the time of interview about 75 percent of the respondents were caught in different diseases and they were under treatment. It was found that the illness of the respondents from low, middle, and high-income groups was 95, 73.3, and 56.6 percent, respectively. This shows that people from high-income were more health conscious as compared to the middle and low-income groups. They might be spending
major portion of their income on nutritious food to avoid expenses on health. In low-income groups it was observed that their family members were suffering from more than one disease. Due to poor financial conditions, they usually take lower level of required calories. They always try to manage their health-related issues through homemade remedies (totkas), which might not work always. When the illnesses become serious, they consult a doctor and bear more expenses, due to disease severity. Most of the people in low-income group had hepatitis followed by diabetics. According to (Farag, et. al., 2012), the low-income groups normally spend less portion of their income on health as compared to high-income groups. The medium and high-income groups were managing all of their resources well. According to them, right from the beginning they prefer to consult a professional doctor and strictly follow their prescriptions, precautions, and instructions.

### Table 2: Respondents' health issues

<table>
<thead>
<tr>
<th>Conditions</th>
<th>IG₁</th>
<th>IG₂</th>
<th>IG₃</th>
<th>Overall (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No illness</td>
<td>3</td>
<td>16</td>
<td>26</td>
<td>25.0</td>
</tr>
<tr>
<td>Cardiac arrest</td>
<td>11</td>
<td>13</td>
<td>14</td>
<td>21.1</td>
</tr>
<tr>
<td>Diabetes</td>
<td>12</td>
<td>9</td>
<td>9</td>
<td>16.7</td>
</tr>
<tr>
<td>Hepatitis</td>
<td>18</td>
<td>7</td>
<td>3</td>
<td>15.6</td>
</tr>
<tr>
<td>Malaria</td>
<td>9</td>
<td>9</td>
<td>4</td>
<td>12.2</td>
</tr>
<tr>
<td>Dengue</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>4.4</td>
</tr>
<tr>
<td>Appendix</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2.8</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1.1</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1.1</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>100.0</td>
</tr>
</tbody>
</table>

During survey it was found that most diseases prevailed in the study area were diabetes, hepatitis, malaria, and dengue. According to (Government of Pakistan, 2020; Clift, 2004), people living in developing countries suffer from infectious diseases such as dengue, hepatitis B&C, and tuberculosis, which needs to be controlled. Besides that, the COVID-19 pandemic has also embarked in Pakistan and the globally, which has more chances of expansion as people are defying to follow the SOPs needed for prevention from the virus (Asghar et al., 2020).

During the survey, willingness to pay for health insurance of respondents at different levels in terms of money were inquired, as if government or any welfare organization may introduce a health policy to them. Only medium and high-income groups agreed at minimum level of price for health insurance. On the other hand, they were asked “either they have ever attended any health-related campaign, or they managed any free medical camp”; the response was "No". Regarding treatment, low-income group always prefer to visit to either to local doctors (hakeems) or government hospitals. Whereas the medium
and high-income groups always prefer to be treated at private hospitals. Most of the people from middle and high-income group were not satisfied with facilities available at the government hospitals. In this regard economically advanced countries have well defined the role of private sector in health care and made their public hospital trustworthy (Farag et al., 2012; Podger, 2016).

Table 3: Awareness and willingness to pay for health insurance

<table>
<thead>
<tr>
<th>Particulars</th>
<th>IG1</th>
<th>IG2</th>
<th>IG3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attend any health-related campaign</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Health insurance</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Thinking about health policy</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Willing to pay more than Rs.2000 annually</td>
<td>X</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Prefers to go for treatment to:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government hospitals</td>
<td>✔</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Private hospitals</td>
<td>X</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

The Table-3 shows that all three income groups had no health insurance during the time of survey. Unfortunately, few of the respondents even did not know the meaning of insurance policy. Talking about willingness to pay for health insurance, respondents from low-income groups reported that they cannot even bear their family food and education expenses. Thus, it will be quite hard for them to manage extra amount for health insurance policy.

Income elasticity of health of the respondents

Through this study, it became clear that despite of stump economic conditions, the low-income group spent about 18 percent of their income on health as compared to medium (about 8 percent) and high (about 4 percent) income groups. Whereas the income elasticity of the health of the respondents has shown very interesting results (shown in Table-4) that with the increase of Rs.100 in the income, the low-income group will spend another Rs.8.8 on health, whereas medium and high-income groups will lower their health expenditure by Rs.6.3 and Rs.1.0, respectively. Important point to consider here is that the medium and high-income groups are already spending enough money on their health, as compared to the low-income group. Moreover, relationship between income and food demand is also important to consider here. Responsiveness of health expenses to increase in income in case of high, and medium-income groups is low as with increase in income they spend more on nutritious food, which keeps them healthy. While an increase in income of low-income groups leads to fulfil the basic food demand. So, they must spend a considerable portion of their income on health also.
Table 4 shows the model of reliability, where the values of adjusted R square of all three concerning groups were almost same ranging between 0.29 to 0.37. Furthermore, multiple correlation between health expenditure and income of low, medium, and high-income groups are about 0.132 (weekly correlated), 0.154 (weekly correlated), and 0.571 (correlated) respectively. In fact, the impact of income over household expenses is not highly correlated because there might be other factors which must be identified through continuation of such academic research projects.

<table>
<thead>
<tr>
<th>Particulars</th>
<th>IG₁</th>
<th>IG₂</th>
<th>IG₃</th>
</tr>
</thead>
<tbody>
<tr>
<td>β₀</td>
<td>19551.23</td>
<td>80757.31</td>
<td>46267.26</td>
</tr>
<tr>
<td>β₁</td>
<td>0.088</td>
<td>-0.063</td>
<td>-0.0094</td>
</tr>
<tr>
<td>Adjusted R square</td>
<td>0.37</td>
<td>0.30</td>
<td>0.29</td>
</tr>
<tr>
<td>Correlation</td>
<td>0.132</td>
<td>0.154</td>
<td>0.571</td>
</tr>
</tbody>
</table>

Several researchers described the relationship between health, income and food demand which depend upon income level and geographic characteristics of the area under study. Therefore, with higher income levels in case of general food demand the elasticity tend be low. This suggests that as the economy grows, households demand increases from inferior goods to luxury goods (Melo et. al., 2015; Farag et al., 2012; Matteo, 2003), this may sometimes raise health concerns, i.e., increases sugar and fat intake which raises concerns about health (Colen, 2018).

**CONCLUSION AND POLICY OPTIONS**

In Pakistan, apart from Covid-19 pandemics, the health issues are surging at increasing rate. Being a developing country, the government is mostly focusing on urban and metropolitan cities; as there is less availability of healthcare resources like trained doctors, staff, equipment, infrastructure, and properly equipped clinics in the rural areas. That is why, the families from rural areas are suffering from health diseases, as they do not bear the transport, medicine, and treatment costs. Economic condition of people living in rural areas is not in a favor of their survival as they just want to work and earn without taking any precautionary measures. In the rural areas mostly the household heads are the only supporter of the family. In case if the head falls sick the whole family suffers economically. In rural Punjab province, if people involve in any serious disease, first they always try to solve it through homemade medicines (totkas) and if it does not work then they used to visit local unauthorized doctors (hakeems). It was also observed that all income group
people were interested in health insurance, but their affordability was an issue, as the low-income group is not willing to pay even Rs.2000\(^6\) annually (the minimum level of cost of health insurance asked to respondents). Health insurance program from government along with dissemination of medical facilities at village level will be highly helpful for low-income group, as majority of them reside in rural areas.

The results elaborate that upon increase in income the low-income group will increase their health expenses (as they already were spending less than needed), while other income groups will reduce their health expenditures, but they might increase their nutrient intake. Design and implementation of policies related to nutrition could be the first and basic step towards health improvement. People from middle and high-income groups prefer to visit private hospitals as they do not rely on the quality of public hospitals. Thus, there is need to build trust of local population towards public sector health organizations and hospitals, while establishing basic health units and deploying trained doctors in the rural areas, which may particularly support to low-income group.

Therefore, federal government must engage positively with public and private entities not only to improve health facilities in the rural areas, but to introduce subsidized health insurance policy to country’s low-income people. Accountability and voice could be a good indicator for better governance and mobilization of government expenditure on health. The impact of income over household expenses was not highly correlated because there might be other factors which must be identified through continuation of such academic research projects.

**References**


\(^6\) Approximately equal to US$ 15.
Income Elasticity of Household’s Health and Wellness in Rural


